

Service Manual

Cassette Deck

RS-M258R(Silver Face)
(Black Face)

Auto-Reverse Cassette Deck with
Auto-Tape Selector, Peak Hold 2 Color
FL Meters and Soft-Touch Controls



This is the Service Manual for the following areas.

- For all European areas except United Kingdom.
- For United Kingdom.

RS-M258R MECHANISM SERIES

Specifications

Track system:	4-track 2-channel auto reverse stereo recording and playback	Inputs:	MIC; sensitivity 0.25 mV, applicable microphone impedance 400Ω–10kΩ
Tape speed:	4.8 cm/s	Outputs:	LINE; sensitivity 60 mV, input impedance 36 kΩ
Wow and flutter:	0.07% (WRMS), ±0.15% (DIN)		LINE; output level 700 mV, output impedance 2.6 kΩ
Frequency response: Metal tape:	20–18,000 Hz		HEADPHONES; output level 125 mV, load impedance 8Ω
	30–17,000 Hz (DIN)		
	30–16,000 Hz ±3 dB		
CrO ₂ tape:	20–18,000 Hz	Motor:	FG servo DC motor
	30–17,000 Hz (DIN)	Heads:	4-head system; 2-SX (Sendust Extra) heads for record/playback 2-double-gap ferrite erase heads
	30–16,000 Hz ±3 dB		
Normal tape:	20–17,000 Hz	Bias frequency:	85 kHz
	30–16,000 Hz (DIN)	Power requirements:	AC; 110/125/220/240 V, 50-60 Hz
	30–15,000 Hz ±3 dB	Preset power voltage:	<input type="checkbox"/> ... 220 V <input checked="" type="checkbox"/> ... 240 V
Signal-to-noise ratio: Dolby [*] NR in:	67 dB (above 5 kHz)	Power consumption:	20 W
Dolby NR out:	57 dB (signal level = max. recording level, CrO ₂ type tape)	Dimensions:	43.0cm(W) × 10.9cm(H) × 33.5cm(D)
Fast forward and rewind time:	Approx. 90 seconds with C-60 cassette tape	Weight:	5.8 kg

Specifications are subject to change without notice.

* 'Dolby' and the double-D symbol are trademarks of Dolby Laboratories.

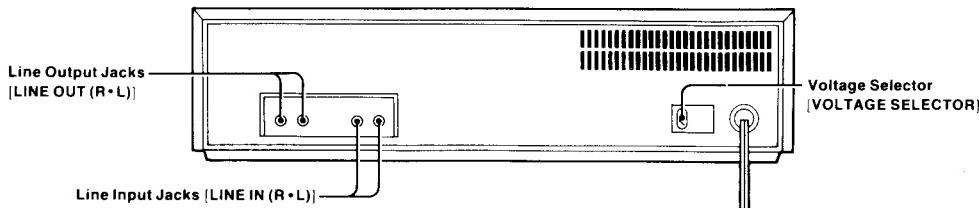
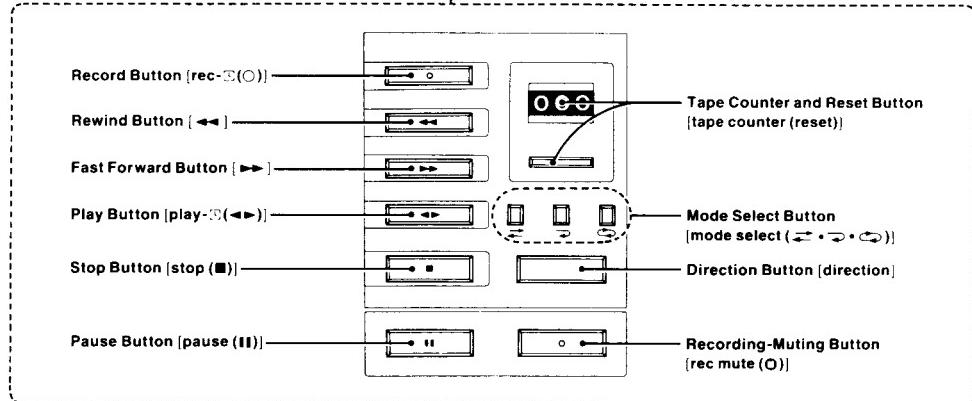
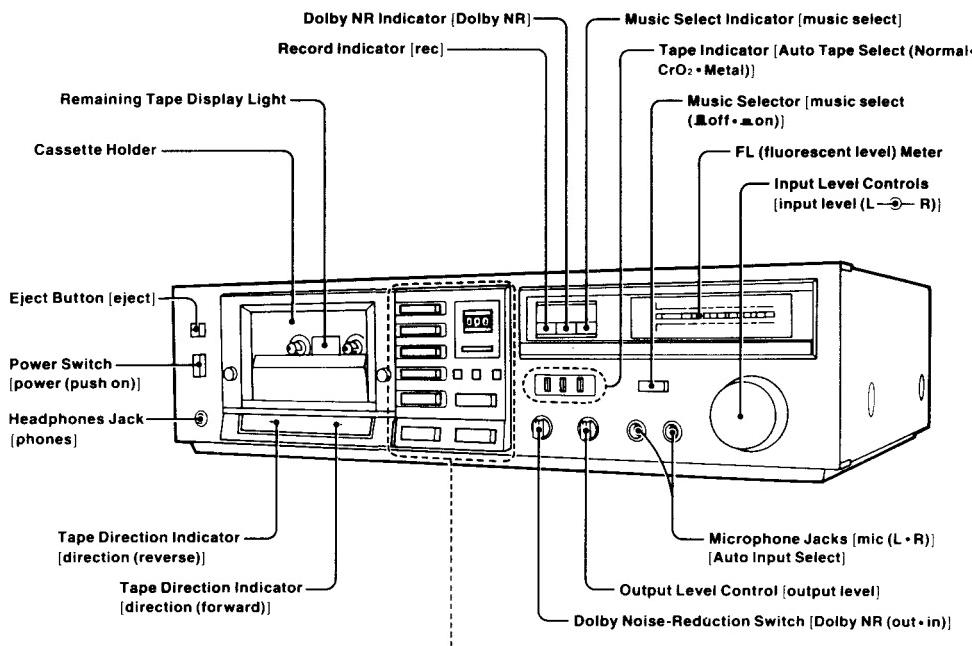
Technics

Matsushita Electric Trading Co., Ltd.

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LOCATION OF CONTROLS AND COMPONENTS

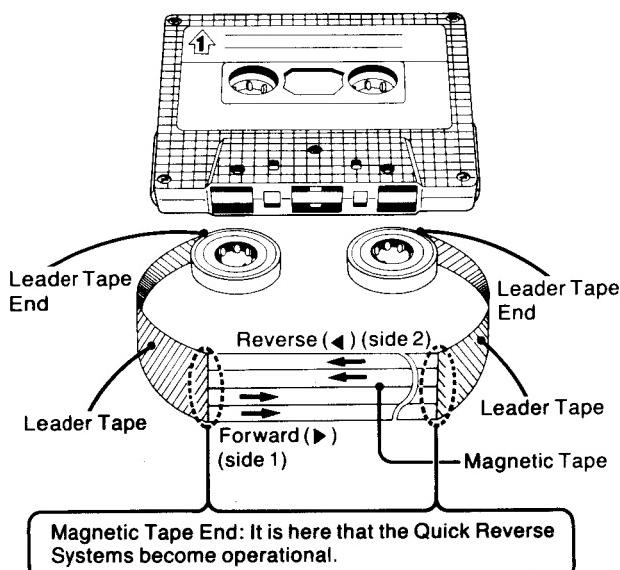


HOW THE AUTO REVERSE FUNCTION WORKS

This unit comes with an Auto Reverse Mechanism. It functions to automatically reverse the direction in which the tape is traveling and enables recording or playback on both sides of the tape without the tape having to be loaded and unloaded by switching over from side 1 to side 2 or from side 2 to side 1.

The Auto Reverse Function adopts a Quick Reverse System which uses a beam of light to detect the joins between the Magnetic Tape and the Leader Tape (in other words, the end of the magnetic tape) and reverses the direction in which the tape is traveling.

The direction in which the tape travels can be switched to forward or reverse using the Direction Button. The tape direction mode can be switched using the Mode Select Buttons.



Operation Notes

(The Quick Reverse System will not function properly in the following cases.)

- The Quick Reverse System may not work at the Magnetic Tape Ends of some cassette tapes. These cassette tapes will be reversed automatically at the tape end.

- The Quick Reverse System may function erroneously in the following cases:
 - (1) When dust, dirt or other foreign matter has adhered to the tape surface.
 - (2) When the tape is wrinkled or creased. (Switch to the Non-Reverse Mode when the tape is repeatedly set to the forward and reverse directions and does not move as a result. Refer to "Operating The Mode Select Buttons.")
 - (3) When a strong light (direct sunlight or a spotlight) is directed onto the tape traveling inside the unit.
 - (4) When the unit sustains a strong shock.

- The Quick Reverse System does not function for about 15 seconds in the following cases:

- (1) Immediately after the Play Button, Record Button or Direction Button has been operated.
- (2) Immediately after the Quick Reverse System has functioned.

■ Operating The Direction Button

When the Direction Button is pressed, the direction of the traveling tape can be switched from forward to reverse or from reverse to forward.

The direction of the tape can be switched whether the tape has stopped or whether it is moving.

The tape direction is shown by the Tape Direction Indicator.

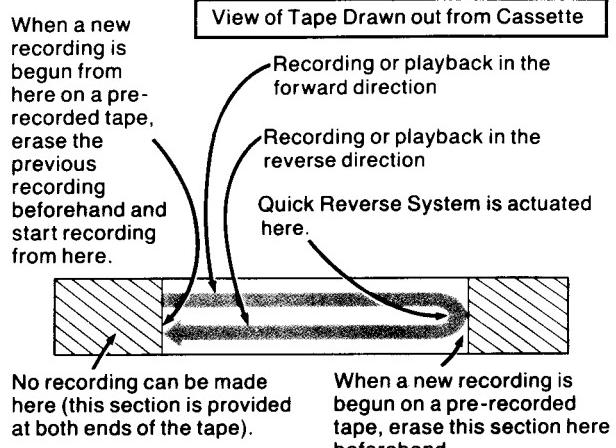
The tape direction is switched every time the Direction Button is depressed.

*When the tape direction is switched (from forward to reverse or vice versa), the muting circuit functions to prevent any recording, playback or erasure for a split second (about 0.3 sec.). (This also applies when the tape direction is switched by the Quick Reverse System.)

■ Operating The Mode Select Buttons

The Mode Select Buttons can be used to select any of 3 tape modes.

- ① **Non-Reverse Mode:** Press the Button. Recording or playback is possible in the forward or reverse direction only. In this case, the Auto Stop Mechanism functions at the Leader Tape End and the tape stops automatically.
- ② **Auto Reverse Mode:** Press the Button. When the tape on side 1 (or side 2) is traveling in the forward direction for recording or playback, the Quick Reverse System is actuated at the magnetic Tape End, and after side 2 (or side 1) has been recorded or played back, the tape automatically stops at the Magnetic Tape End.



Notes:

(Bear the following points in mind when recording or playing back a tape in the auto-reverse mode.)

- (1) Recording is not possible on the side of a cassette in which the Accidental-Erase Prevention Tab has been broken out. When recording from side 1 in the forward direction, it will not be possible to press in the Record Button if the Accidental-Erase Prevention Tab for side 1 has been broken out. If the Accidental-Erase Prevention Tab for side 2 has been broken out, material will be recorded on side 1 only and then the tape will stop at the Magnetic Tape End.
- (2) When recording or playing back in the reverse direction, the Quick Reverse System will not change the direction over to forward even when the tape arrives at the Magnetic Tape End, and the tape stops.
- (3) When recording new material in the auto-reverse mode on a pre-recorded tape, recording in the forward direction will stop and it will not be possible to erase about 28 mm at the part of the tape where the direction is switched from forward to reverse (see figure above). Therefore, make a point of erasing the previous recording at this part beforehand and then proceeding with the recording of the new material.

- ③ **Auto-Continuous Mode:** Press the Button.

● Playback

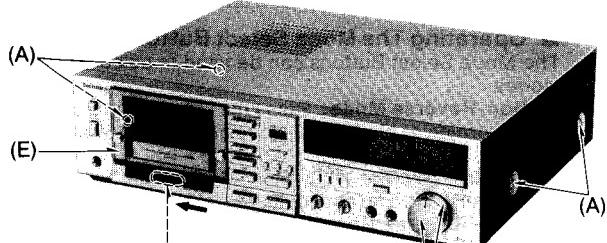
Whether the tape is traveling in the forward or reverse direction, playback will continue until the Stop Button is pressed.

● Recording

The same mode is established as the auto reverse mode.

*When two Mode Select Buttons are erroneously pressed simultaneously, the left-hand button mode is established. When none of the three Mode Select Buttons have been set to their pressed position, the Auto-Continuous Mode is established.

DISASSEMBLY INSTRUCTIONS



* The head azimuth can be adjusted (F) by removing the indication plate.

(The indication plate can be removed by pushing it in the direction of the arrow.)

Fig. 1

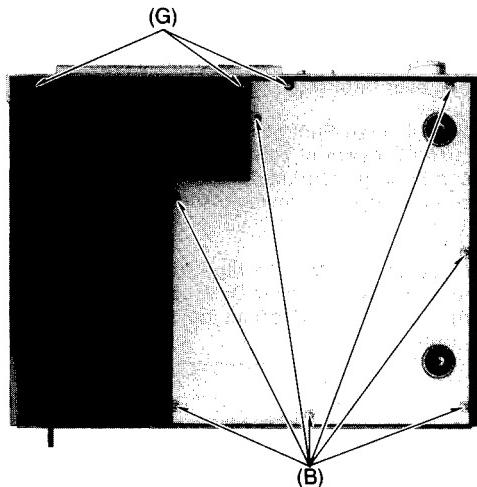


Fig. 2

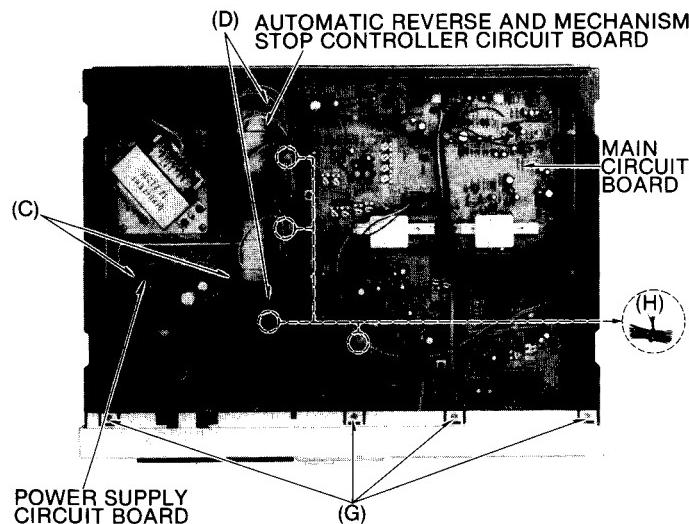


Fig. 3

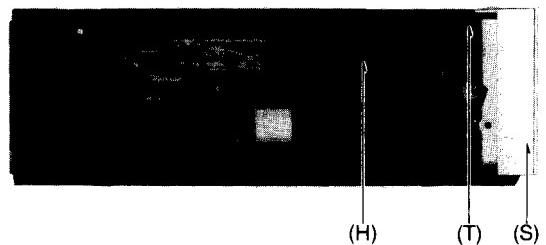


Fig. 4

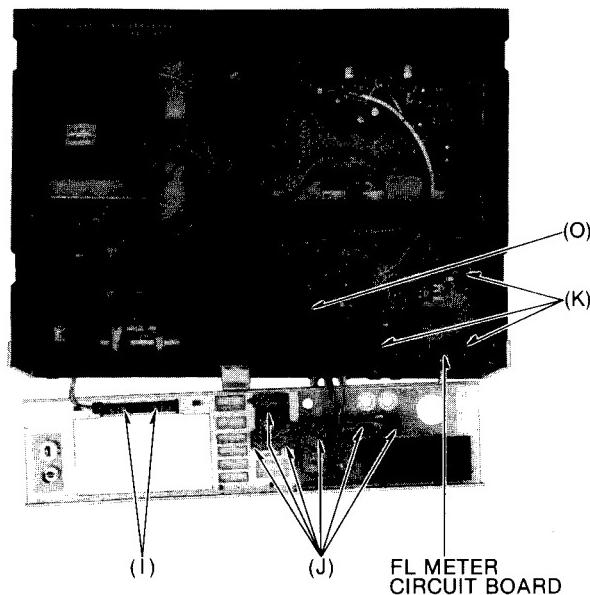


Fig. 5

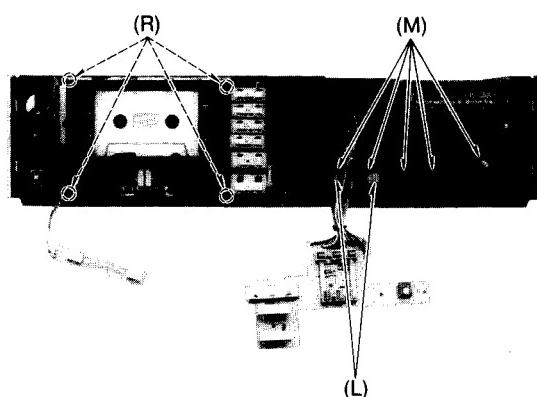


Fig. 6

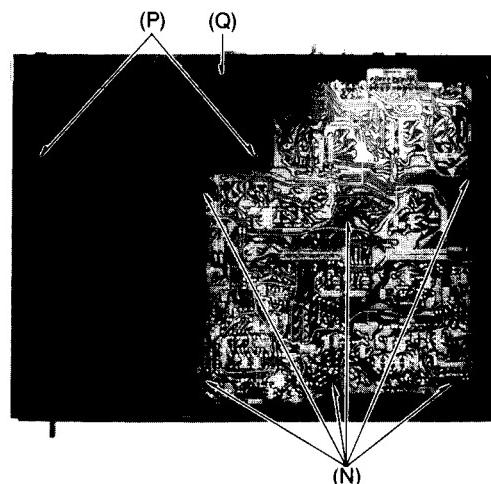


Fig. 7

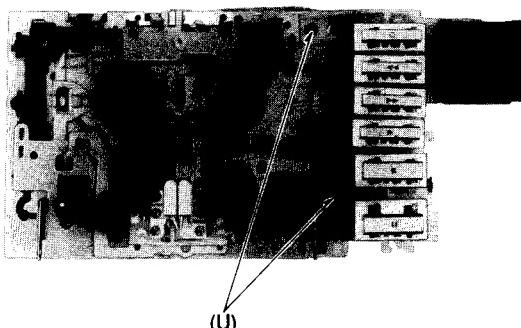


Fig. 8

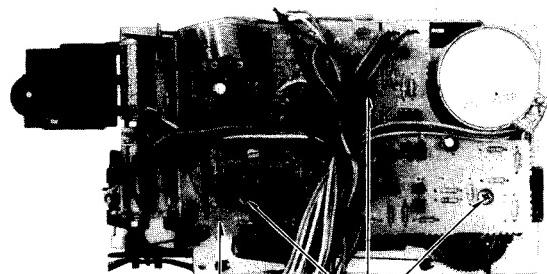


Fig. 9

Ref. No.	Procedure	To remove ——	Remove ——	Shown in fig. ——
1	1	Case cover	• 4 screws (A)	1
2	2	Bottom cover	• 7 screws (B)	2
3	1→3	Power supply circuit board	• 2 red screws (C)	3
4	1→4	Auto-reverse and mechanism stop controller circuit board	• 2 red screws (D)	3
5	1→2→5	Front panel	• Cassette lid (E) • 2 level control knobs (F) • 7 screws (G) • 5 binders (H) • 2 screws (I) • 6 red screws (J)	1 1 2, 3 3, 4 5 5
6	1→2→5→6	FL meter circuit board	• 3 red screws (K)	5
7	1→2→5→7	Main amp. circuit board	• 2 control knobs (L) • 5 nuts (M) • 6 red screws (N)	6 6 7
8	1→2→5→8	Mechanism unit	• Binder (O) • 2 screws (P) • Bottom plate (Q) • 4 red screws (R) • Side panel (S) • Eject lever (T)	5 7 7 6 4 4
9	1→2→5→8→9	Operation button assembly	• 2 screws (U)	8
10	1→2→5→8→10	Tape end and rotary detection circuit board	• 3 red screws (X)	9

DISASSEMBLY NOTES

1. For measurement and adjustment with the mechanical unit removed from the set, connect the mechanical chassis and lug terminals with connection wires, as shown in Fig. 1. This is to prevent influence from mechanical noise.

2. Upper Base Plate removal

Remove the pinch rollers (R and L) and 3 screws as shown in Fig. 1. (Be careful not to lose the steel ball under the head base plate spring.)

3. Motor removal

First, remove the screw (a), then the detection lever angle. Then, remove the screw (b), as shown in Fig. 1 and 2.

4. Reel frame assembly removal

Remove 2 snap washers (c), then 2 screws (d) to pull out the assembly, as shown in Figs. 1 and 2.

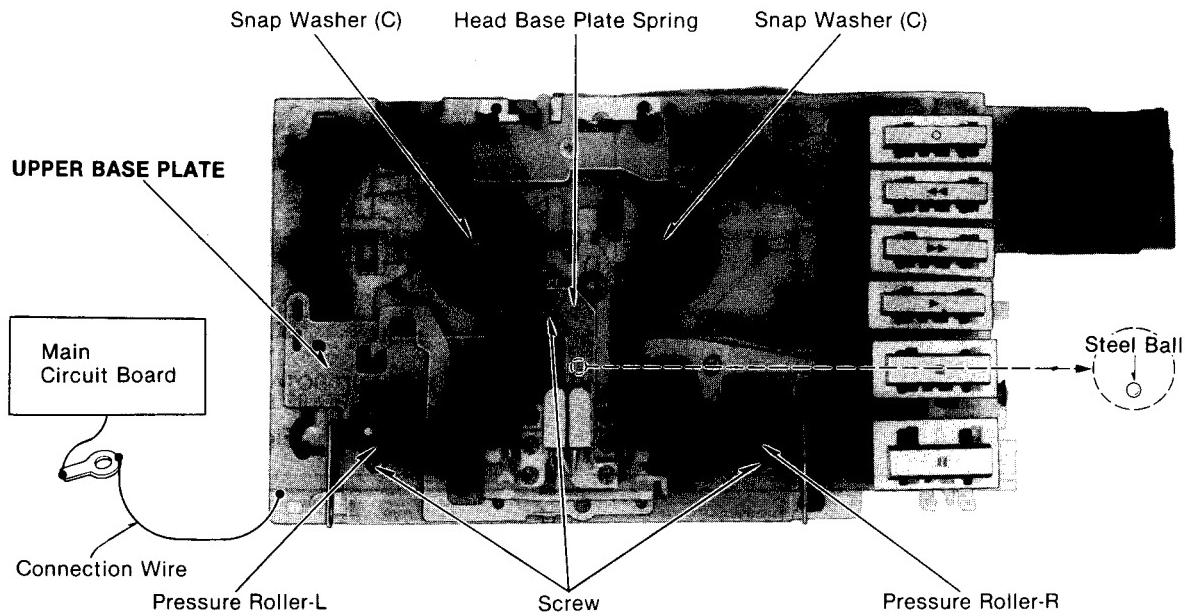


Fig. 1

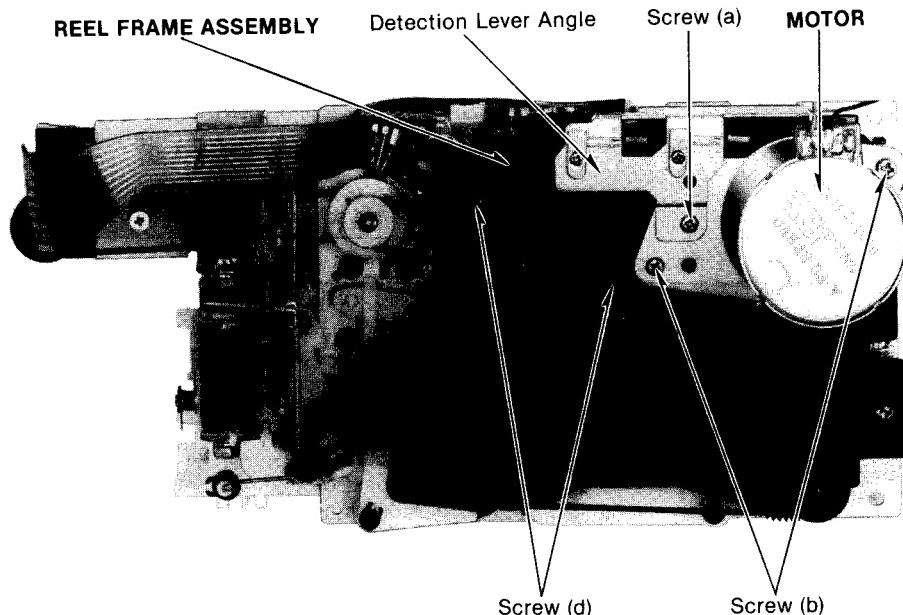


Fig. 2

MEASUREMENT AND ADJUSTMENT METHODS

Tape selector (Tape mode switching)

For measurement adjustment with test tapes without tape detection holes, switch tape modes as follows.

(For normal tape mode, just insert a normal tape into the cassette holder.)

* Metal tape mode setting :

Metal tape mode is obtained by disconnecting the 3 pin socket **D** from the 3 pin post **D** on the P.C.B. (Printed Circuit Board).

* CrO₂ tape mode setting :

First, disconnect the 3 pin socket **D** in the same way as above. Then, as illustrated in the figure right, connect the terminal-1 of the 3 pin post to the ground with a connection wire.

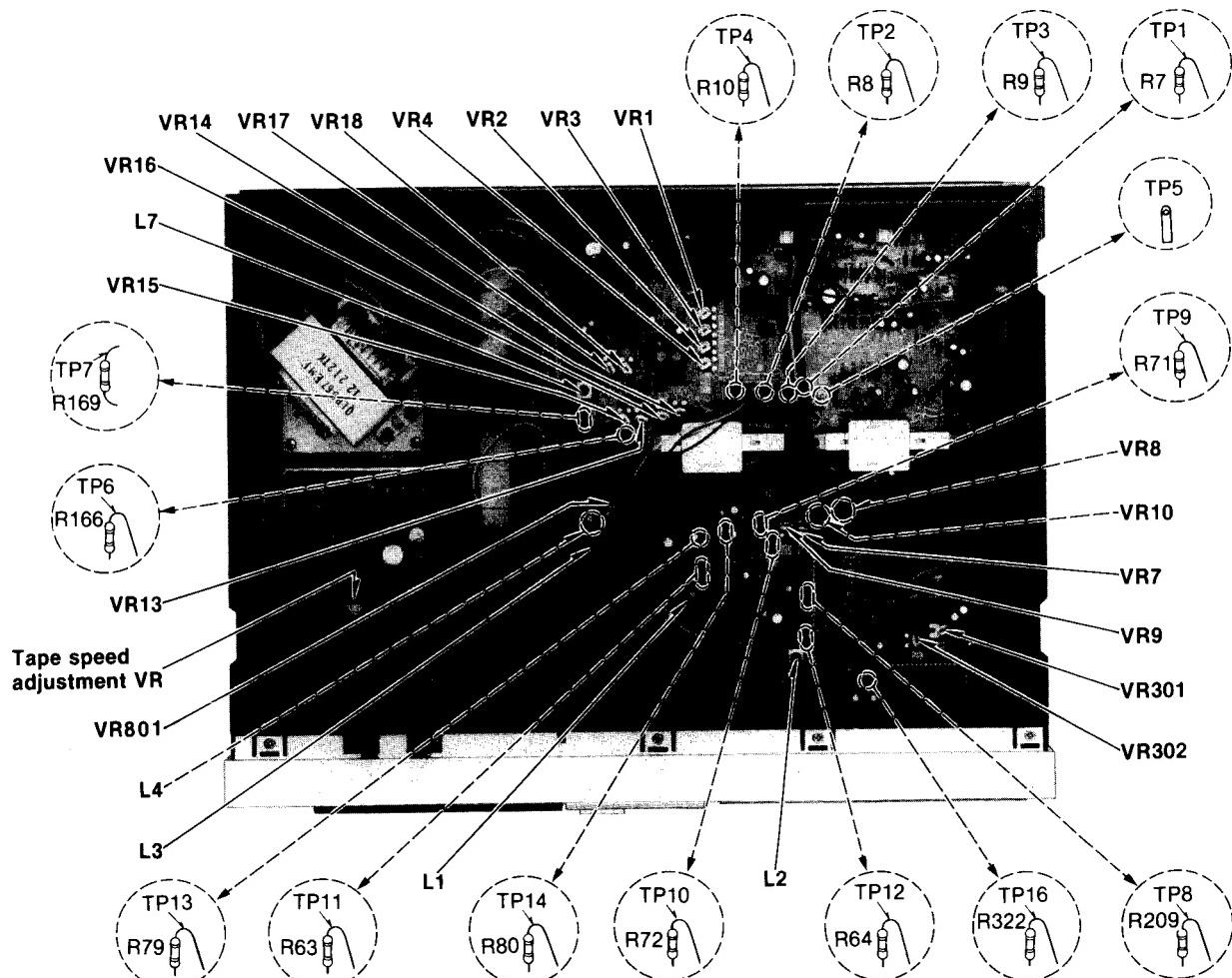
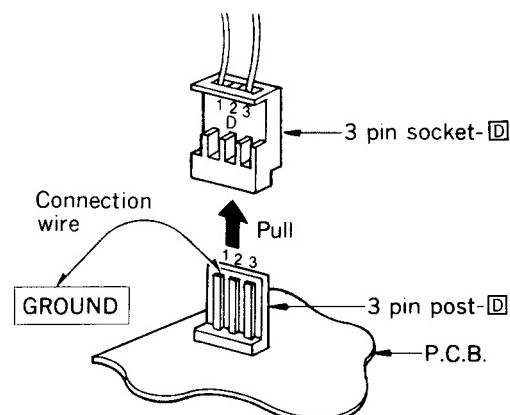
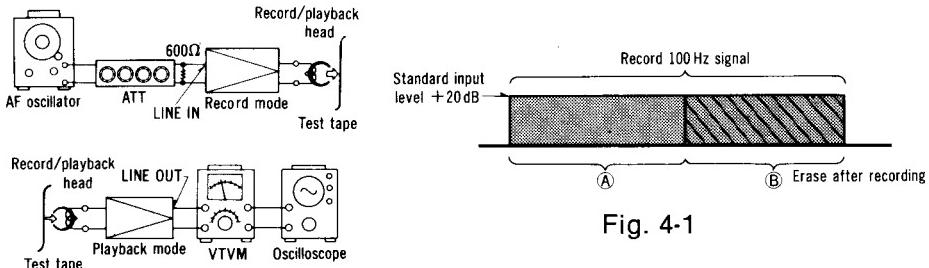
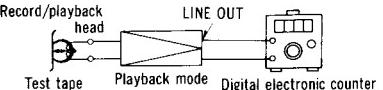


Fig. 1

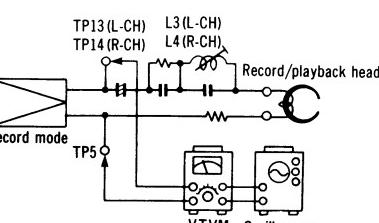
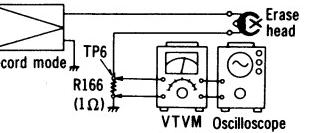
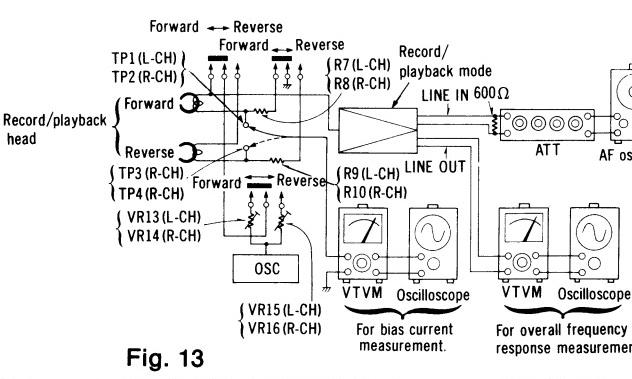
NOTES:

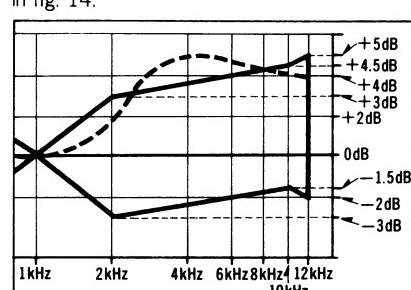
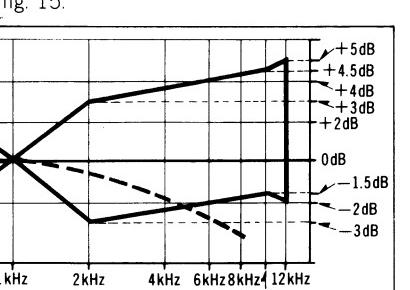
1. When a test tape is used, it must be inserted in the cassette holder so that its label can be seen in both forward and reverse modes. (The opposite side cannot be used.)
2. Keep good condition, set switches and controls in the following positions, unless otherwise specified.
 - Make sure heads are clean.
 - Make sure capstan and pressure roller are clean.
 - Judgeable room temperature: $20 \pm 5^\circ\text{C}$ ($68 \pm 9^\circ\text{F}$)
 - Dolby NR switch: OUT
 - Music selector: OFF
 - Input level controls: Maximum
 - Output level control: Maximum

ITEM	MEASUREMENT & ADJUSTMENT
<p>A Head adjustment</p> <p>Condition: * Record/playback mode. (Forward/reverse)</p> <p>Equipment: * VTVM * Oscilloscope * ATT * AF oscillator * Test tape (Tape path viewer with mirror).....QZZCRD * Test tape (azimuth)QZZCFM * Test tape (reference blank tape)QZZCRZ for Metal</p>	<p>Adjustment after record/playback head replacement</p> <p>① After replacement of the record/playback head, evenly tighten the six record/playback head screws, (A), (B), (C), (D), (E), (F) in the clockwise direction. Then tighten them completely.</p> <p>Screw (A): for height adjustment Screw (B): for tilt adjustment Screw (C): for azimuth adjustment } Record/playback head (Forward)</p> <p>Screw (D): for height adjustment Screw (E): for tilt adjustment Screw (F): for azimuth adjustment } Record/playback head (Reverse)</p> <p>Screw (G): for height adjustment } Erase head (Reverse)</p> <p>Screw (H): for height adjustment } Erase head (Forward)</p> <p>Fig. 2</p> <p>Replacement of record/playback head</p> <p>↓</p> <p>① Tighten screw.</p> <p>↓</p> <p>② Place a mark on each screws.</p> <p>↓</p> <p>③ Return screws by the number of specified turns.</p> <p>↓</p> <p>④ Travel test Adjust with screws (A), (B), (D) and (E).</p> <p>↓</p> <p>⑤ Azimuth adjustment Adjust with screws (C) and (F).</p> <p>N.G</p> <p>O.K</p> <p>N.G</p> <p>⑥ Travel test for recheck.</p> <p>O.K</p> <p>⑦ Playback frequency response check.</p> <p>Erasability check.</p> <p>② Place a mark on each screw head with a felt-tip pen. (shown in fig. 2-1)</p> <p>③ Referring to the mark on each screw head, return the screws counterclockwise by the number of turns described below.</p> <p>Record/playback head (Forward)</p> <p>Screw (A) ... 5—5.5 turns Screw (B) ... 2—2.5 turns Screw (C) ... 2 turns Screw (D) ... 3 turns Screw (E) ... 2—2.5 turns Screw (F) ... 2 turns</p> <p>Return the screws.</p> <p>Fig. 2-1</p> <p>Fig. 2-2</p> <p>Fig. 2-3</p> <p>④ Load a travel test tape (mirror-equipped tape: QZZCRD) and run the tape in the play mode. Adjust the screws described below so that the tape does not contact the tape guide for the record/playback head. (shown in fig. 2-4)</p> <ul style="list-style-type: none"> • Forward condition ... Adjust screws (A) and (B). • Reverse condition ... Adjust screws (D) and (E). <p>* After adjustment, run the tape for approximately 3 minutes to check for zigzag travel.</p> <p>⑤ Azimuth adjustment (at normal position)</p> <ol style="list-style-type: none"> 1. Test equipment connection is shown in fig. 3. 2. Play the 8kHz, -20dB signal section of the general standard tape (QZZCFM), and adjust the following screws so that the LINE OUT output voltage is 60mV as measured by a VTVM. <ul style="list-style-type: none"> • Forward condition ... Adjust screw (C). • Reverse condition ... Adjust screw (F). (Level difference between R and L channels should be within 2dB.) <p>* If the standard value is not obtained, re-adjust as described under ④.</p> <p>⑥ Load the travel test tape (mirror-equipped tape: QZZCRD) and run the tape in the play mode. Check for zigzag travel.</p> <p>* If zigzag travel occurs, check adjustment items ④ and ⑤ and adjust as required.</p> <p>⑦ Playback frequency response check</p> <p>Playback frequency equalizer adjustment section of the general standard tape (QZZCFM), and check that the frequency response at 12.5kHz is ± 4.5 dB of that at 315Hz.</p> <p>Record/playback head Tape guide Tape Check point</p> <p>Fig. 2-4</p> <p>Fig. 3</p>

ITEM	MEASUREMENT & ADJUSTMENT
	<p>⑧ Erasing ratio check</p> <ol style="list-style-type: none"> 1. Test equipment connection is shown in fig. 4. 2. Load reference blank test tape (QZZCRZ) (metal tape). 3. Set the tape selector to metal position. 4. Supply 100Hz signal from AF oscillator through ATT to LINE IN. 5. Adjust the ATT so that the output level at LINE OUT becomes 0.7V (The input level at this condition is termed the standard input level). 6. Adjust the ATT so that the input level is 20dB above the standard input level. 7. Press the record and playback buttons. 8. After recording, erase portion ② by setting the input level controls to minimum under a no-signal condition (shown in fig. 4-1).  <p>Fig. 4</p> <p>Fig. 4-1</p> <p>10. Playback portions ① and ②, and measure output levels (dB) at LINE OUT. 11. Perform measurements for both channels. Erasing ratio (dB) = Measured value of portion ① – Measured value of portion ②.</p> <div style="border: 1px solid black; padding: 2px; display: inline-block;">Reference value: Greater than 52dB</div>
③ Tape speed accuracy Condition: * Playback mode (Forward/reverse) Equipment: * Digital electronic counter or frequency counter * Test tape ... QZZCWAT	<ol style="list-style-type: none"> 1. Test equipment connection is shown in fig. 5. 2. Playback test tape (QZZCWAT 3,000Hz), and supply playback signal to frequency counter. 3. Take measurement at middle section of tape. 4. Measure this frequency. 5. On the basis of 3,000Hz, determine value by following formula: $\text{Tape speed accuracy} = \frac{f - 3,000}{3,000} \times 100 (\%)$ <p>where, f = measured value</p> <div style="border: 1px solid black; padding: 2px; display: inline-block;">Standard value: $\pm 1.5\%$</div> <p>Adjustment method</p> <ol style="list-style-type: none"> 1. Playback the test tape (middle). 2. Adjust tape speed adjustment VR (shown in fig. 1) so that frequency becomes 3,000Hz. (Please use non metal type screwdriver when you adjust tape speed on this unit.) <p>Tape speed fluctuation</p> <p>Make measurements in same manner as above (beginning, middle and end of tape), and determine the difference between maximum and minimum values and calculate as follows:</p> $\text{Tape speed fluctuation} = \frac{f_1 - f_2}{3,000} \times 100 (\%)$ <p>f_1 = maximum value, f_2 = minimum value</p> <div style="border: 1px solid black; padding: 2px; display: inline-block;">Standard value: 1%</div>  <p>Fig. 5</p>

ITEM	MEASUREMENT & ADJUSTMENT																				
<p>C Playback frequency response</p> <p>Condition:</p> <ul style="list-style-type: none"> * Playback mode (Forward/reverse) * Normal tape mode * Output level control ... MAX <p>Equipment:</p> <ul style="list-style-type: none"> * VTVM * Oscilloscope * Test tape ... QZZCFM 	<p>Measurement</p> <ol style="list-style-type: none"> 1. Test equipment connection is shown in fig. 3. 2. Place UNIT into playback mode. 3. Playback the frequency response test tape (QZZCFM). 4. Measure output level at 315Hz, 12.5kHz, 8kHz, 4kHz, 1kHz, 250Hz, 125Hz and 63Hz and compare each output level with the standard frequency 315Hz, at LINE OUT. 5. Make measurement for both channels. 6. Make sure that the measured value is within the range specified in the frequency response chart (fig. 6). <p>Adjustment method</p> <ol style="list-style-type: none"> 1. If the measured value increases at middle frequency range, as shown in fig. 7, P.C.B. connection points (a) (L-CH) and (a') (R-CH) should be shorted (fig. 9). <p>Compensation value</p> <table border="1"> <thead> <tr> <th>1 kHz</th><th>2 kHz</th><th>5 kHz</th><th>10 kHz</th><th>12.5 kHz</th></tr> </thead> <tbody> <tr> <td>around -0.4 dB</td><td>around -0.7 dB</td><td>around -1 dB</td><td>around -1 dB</td><td>around -1 dB</td></tr> </tbody> </table> <p>Fig. 6</p> <p>Fig. 7</p> <ol style="list-style-type: none"> 2. If the measured value decreases at middle frequency range, as shown in fig. 8, P.C.B. connection points (a) (L-CH) and (a') (R-CH) should be opened. <p>Compensation value</p> <table border="1"> <thead> <tr> <th>1 kHz</th><th>2 kHz</th><th>5 kHz</th><th>10 kHz</th><th>12.5 kHz</th></tr> </thead> <tbody> <tr> <td>around +0.4 dB</td><td>around +0.7 dB</td><td>around +1 dB</td><td>around +1 dB</td><td>around +1 dB</td></tr> </tbody> </table> <p>Fig. 8</p> <ol style="list-style-type: none"> 3. Make measurement again according to steps from (2) to (6) of the "Measurement" above. <p>Connection point</p> <p>Fig. 9</p>	1 kHz	2 kHz	5 kHz	10 kHz	12.5 kHz	around -0.4 dB	around -0.7 dB	around -1 dB	around -1 dB	around -1 dB	1 kHz	2 kHz	5 kHz	10 kHz	12.5 kHz	around +0.4 dB	around +0.7 dB	around +1 dB	around +1 dB	around +1 dB
1 kHz	2 kHz	5 kHz	10 kHz	12.5 kHz																	
around -0.4 dB	around -0.7 dB	around -1 dB	around -1 dB	around -1 dB																	
1 kHz	2 kHz	5 kHz	10 kHz	12.5 kHz																	
around +0.4 dB	around +0.7 dB	around +1 dB	around +1 dB	around +1 dB																	
<p>D Playback gain</p> <p>Condition:</p> <ul style="list-style-type: none"> * Playback mode (Forward/reverse) * Output level control ... MAX <p>Equipment:</p> <ul style="list-style-type: none"> * VTVM * Oscilloscope * Test tape ... QZZCFM 	<ol style="list-style-type: none"> 1. Test equipment connection is shown in fig. 3. 2. Playback standard recording level portion on test tape (QZZCFM 315Hz), and using VTVM measure the output level at LINE OUT jack. 3. Make measurement for both channels. <p>Standard value: $0.7V \pm 1dB$</p> <p>Adjustment method</p> <ol style="list-style-type: none"> 1. If measured value is not standard, adjust the following VR. Forward VR1 (L-CH), VR2 (R-CH) Reverse VR3 (L-CH), VR4 (R-CH) 2. After adjustment, check "Playback frequency response" again. 																				

ITEM	MEASUREMENT & ADJUSTMENT																						
E Bias leakage Condition: * Record mode (Forward/reverse) Equipment: * VTVM * Oscilloscope	<p>1. Test equipment connection is shown in fig. 10. 2. Place UNIT into record mode. 3. Adjust trap coil L3 (L-CH), L4 (R-CH), so that measured value on VTVM becomes minimum. 4. Take adjustment for both channels.</p>  <p>Fig. 10</p>																						
F Erase current Condition: * Record mode (Forward/reverse) * Normal tape mode * CrO ₂ tape mode * Metal tape mode Equipment: * VTVM * Oscilloscope	<p>1. Test equipment connection is shown in fig. 11. 2. Place UNIT into record and metal tape mode and then measure voltage at test point 6. 3. Determine erase current with the following formula:</p> $\text{Erase current (A)} = \frac{\text{Voltage across both ends of R166}}{1 (\Omega)}$ <p>Standard value: $170 \pm 5 \text{ mA}$ (Metal)</p> <p>4. If measured value is not within standard adjust VR17 (Forward), VR18 (Reverse). 5. Set the tape selector to each position. 6. Make sure that the measured value is within standard.</p> <p>Standard value: around 80mA (Normal), around 110mA (CrO₂)</p>  <p>Fig. 11</p>																						
G Overall frequency response Condition: * Record/playback mode (Forward/reverse) * Normal tape mode * CrO ₂ tape mode * Metal tape mode * Input level controls... MAX * Output level control... MAX * Standard input level; MIC $-72 \pm 3 \text{ dB}$ LINE IN ... $-24 \pm 3 \text{ dB}$ Equipment: * VTVM * AF oscillator * ATT * Oscilloscope * Resistor (600Ω) * Test tape (reference blank tape) ...QZZCRA for Normal ...QZZCRX for CrO ₂ ...QZZCRZ for Metal	<p>Note: Before measuring and adjusting, make sure of the playback frequency response (For the method of measurement, please refer to the playback frequency response).</p> <p>Overall frequency response adjustment by recording bias current (Recording equalizer is fixed)</p> <ol style="list-style-type: none"> 1. Make connections as shown in fig. 13. 2. Place UNIT into normal tape mode and load the test tape (QZZCRA). 3. Input a 1kHz, -24 dB signal through LINE IN. Place the set into record mode. 4. Fine adjust the ATT to obtain 0.7V LINE OUT output. * Make sure that the input signal level is $-24 \pm 3 \text{ dB}$ with 0.7V output voltage. 5. Adjust the ATT to reduce the input signal level by 20dB. 6. Adjust the AF oscillator to generate 50Hz, 100Hz, 200Hz, 500Hz, 1kHz, 4kHz, 8kHz, 10kHz and 12kHz signals, and record these signals on the test tape. 7. Playback the signals recorded in step 6, and check if the frequency response curve is within the limits shown in the overall frequency response chart for normal tapes (fig. 12). (If the curve is within the charted specifications, proceed to steps 8, 9, 10 and 11.) If the curve is not within the charted specifications, adjust as follows;  <p>Fig. 13</p> <p>Overall frequency response chart (Normal)</p> <table border="1"> <thead> <tr> <th>Frequency (Hz)</th> <th>Response (dB)</th> </tr> </thead> <tbody> <tr><td>50Hz</td><td>+2.5dB</td></tr> <tr><td>70Hz</td><td>+4dB</td></tr> <tr><td>200Hz</td><td>+2dB</td></tr> <tr><td>600Hz</td><td>0dB</td></tr> <tr><td>1kHz</td><td>-2dB</td></tr> <tr><td>2kHz</td><td>-1.5dB</td></tr> <tr><td>4kHz</td><td>-2dB</td></tr> <tr><td>8kHz</td><td>-2.5dB</td></tr> <tr><td>10kHz</td><td>-3dB</td></tr> <tr><td>12kHz</td><td>-2.5dB</td></tr> </tbody> </table> <p>Fig. 12</p>	Frequency (Hz)	Response (dB)	50Hz	+2.5dB	70Hz	+4dB	200Hz	+2dB	600Hz	0dB	1kHz	-2dB	2kHz	-1.5dB	4kHz	-2dB	8kHz	-2.5dB	10kHz	-3dB	12kHz	-2.5dB
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12kHz	-2.5dB																						

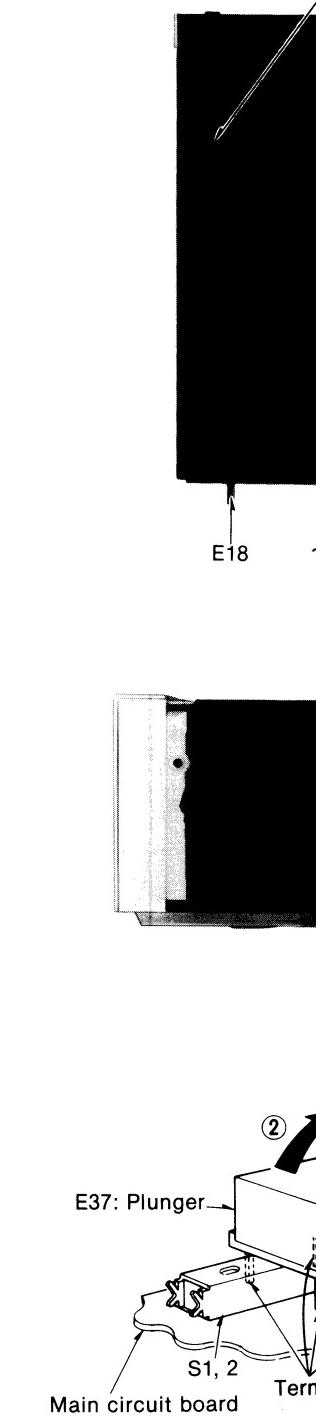
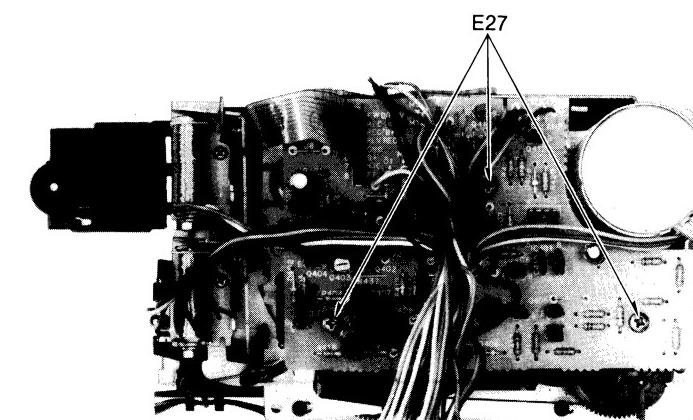
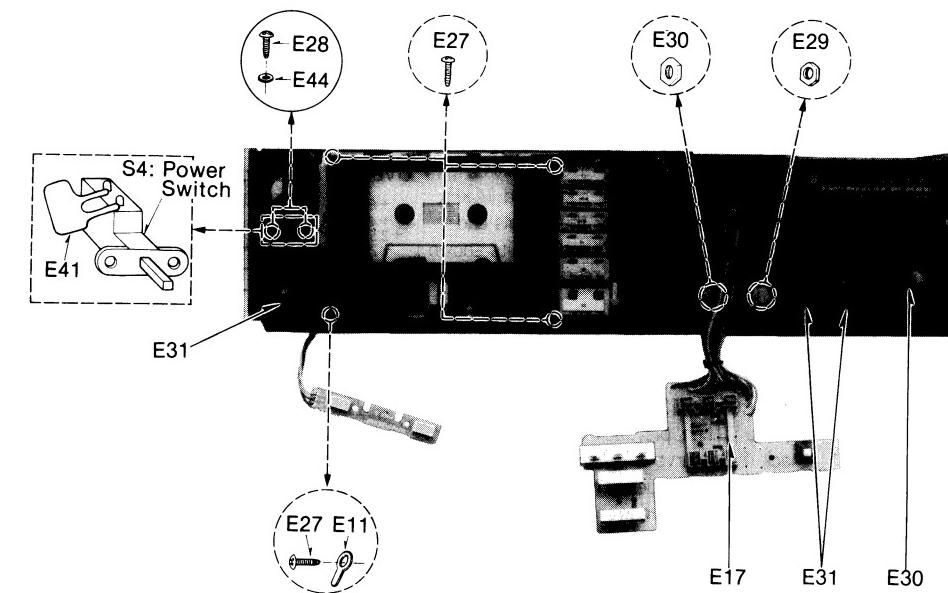
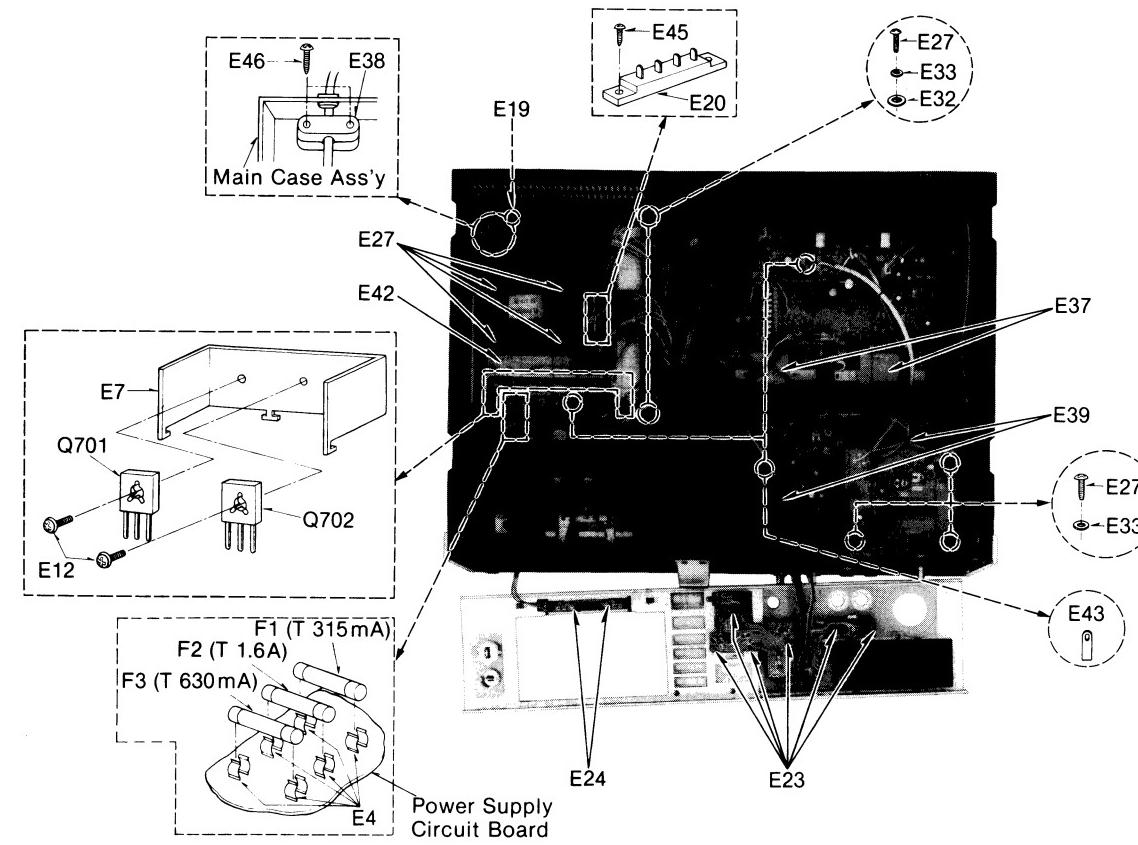
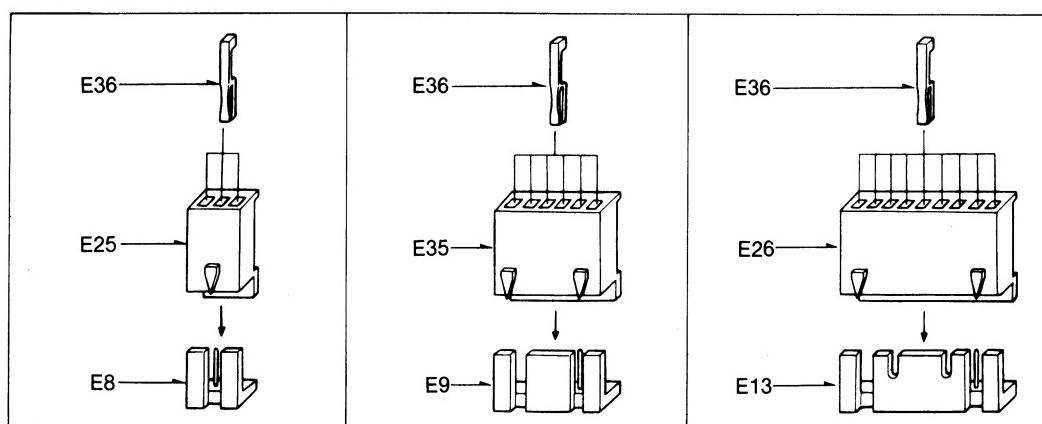
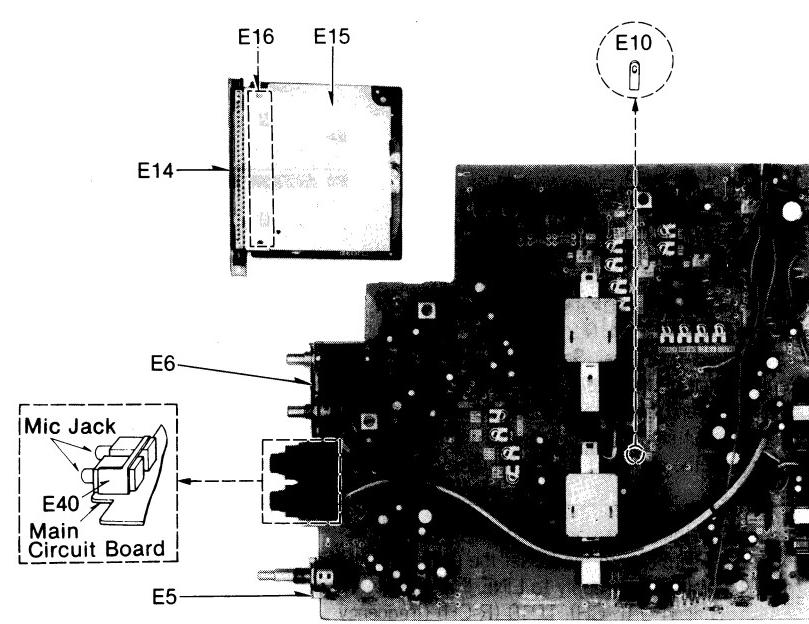
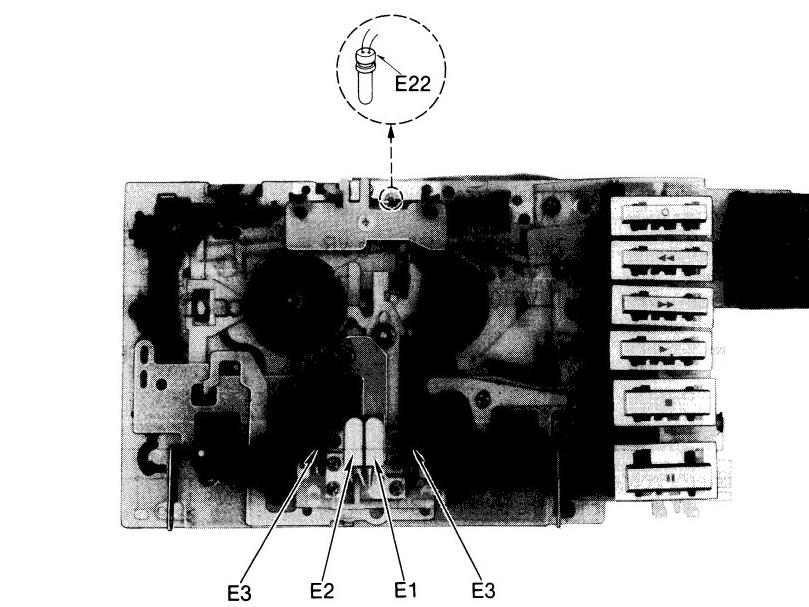
ITEM	MEASUREMENT & ADJUSTMENT																								
	<p>Adjustment A: When the curve exceeds the overall frequency response chart specifications (fig. 12) as shown in fig. 14.</p>  <p>Fig. 14</p> <ol style="list-style-type: none"> 1) Increase bias current by turning volumes as follows, Forward ... VR13 (L-CH), VR14 (R-CH) Reverse ... VR15 (L-CH), VR16 (R-CH) (See fig. 1 on page 7.) 2) Repeat steps 6 and 7 to confirm. (Proceed to steps 8, 9, 10 and 11 if the curve is now within the charted specifications in fig. 12.) 3) If the curve still exceeds the specifications (fig. 12), increase bias current further and repeat steps 6 and 7. 8. Place UNIT into CrO₂ tape mode. 9. Change test tape to QZZCRX, and record 50Hz, 100Hz, 200Hz, 500Hz, 1kHz, 4kHz, 8kHz, 10kHz, 12.5kHz and 14kHz signals. Then, playback the signals and check if the curve is within the limits shown in the overall frequency response chart for CrO₂ tapes (fig. 16). 10. Place UNIT into metal tape mode change test tape to QZZCRZ, and record 50Hz, 100Hz, 200Hz, 500Hz, 1kHz, 4kHz, 8kHz, 10kHz, 12.5kHz and 14kHz signals. Then, playback the signals and check if the curve is within the limits shown in the overall frequency response chart for metal tapes (fig. 16). 11. Confirm that bias currents are approximately as follows when the UNIT is set at different tape mode. * Read voltage on VTVM and calculate bias current by following formula: $\text{Bias current (A)} = \frac{\text{Value read on VTVM (V)}}{10 (\Omega)}$ <p>Standard value: around $400\mu\text{A}$ (Normal position) around $600\mu\text{A}$ (CrO₂ position) around $950\mu\text{A}$ (Metal position)</p> <p>: measured at Forward ... TP1 (L-CH) and TP2 (R-CH) Reverse ... TP3 (L-CH) and TP4 (R-CH)</p>  <p>Fig. 15</p>																								
	<ol style="list-style-type: none"> 1) Reduce bias current by turning volumes as follows, Forward ... VR13 (L-CH), VR14 (R-CH) Reverse ... VR15 (L-CH), VR16 (R-CH) (See fig. 1 on page 7.) 2) Repeat steps 6 and 7 to confirm. (Proceed to steps 8, 9, 10 and 11 if the curve is now within the charted specifications in fig. 12.) 3) If the curve still falls below the charted specifications (fig. 12), reduce bias current further and repeat steps 6 and 7. <p>Overall frequency response chart (CrO₂, Metal)</p> <table border="1"> <thead> <tr> <th>Frequency (Hz)</th> <th>Response (dB)</th> </tr> </thead> <tbody> <tr><td>50Hz</td><td>+6dB</td></tr> <tr><td>70Hz</td><td>+4dB</td></tr> <tr><td>200Hz</td><td>+2.5dB</td></tr> <tr><td>600Hz</td><td>0dB</td></tr> <tr><td>1kHz</td><td>-2dB</td></tr> <tr><td>2kHz</td><td>-1.5dB</td></tr> <tr><td>4kHz</td><td>-2dB</td></tr> <tr><td>8kHz</td><td>-2.5dB</td></tr> <tr><td>10kHz</td><td>-4dB</td></tr> <tr><td>12kHz</td><td>-2.5dB</td></tr> <tr><td>14kHz</td><td>-4dB</td></tr> </tbody> </table> <p>Fig. 16</p>	Frequency (Hz)	Response (dB)	50Hz	+6dB	70Hz	+4dB	200Hz	+2.5dB	600Hz	0dB	1kHz	-2dB	2kHz	-1.5dB	4kHz	-2dB	8kHz	-2.5dB	10kHz	-4dB	12kHz	-2.5dB	14kHz	-4dB
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11

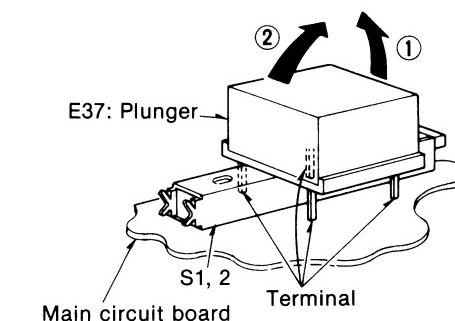
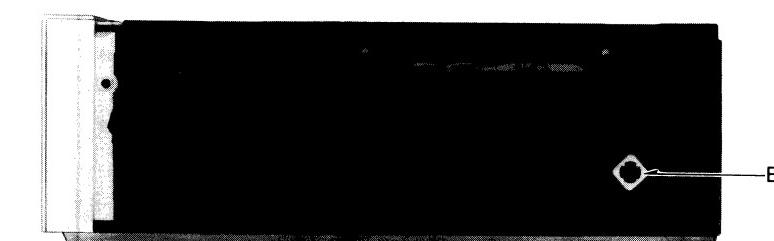
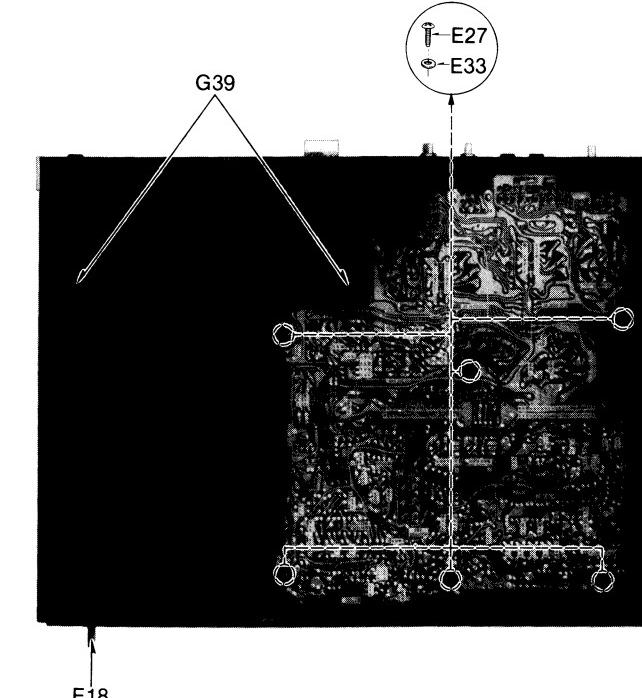
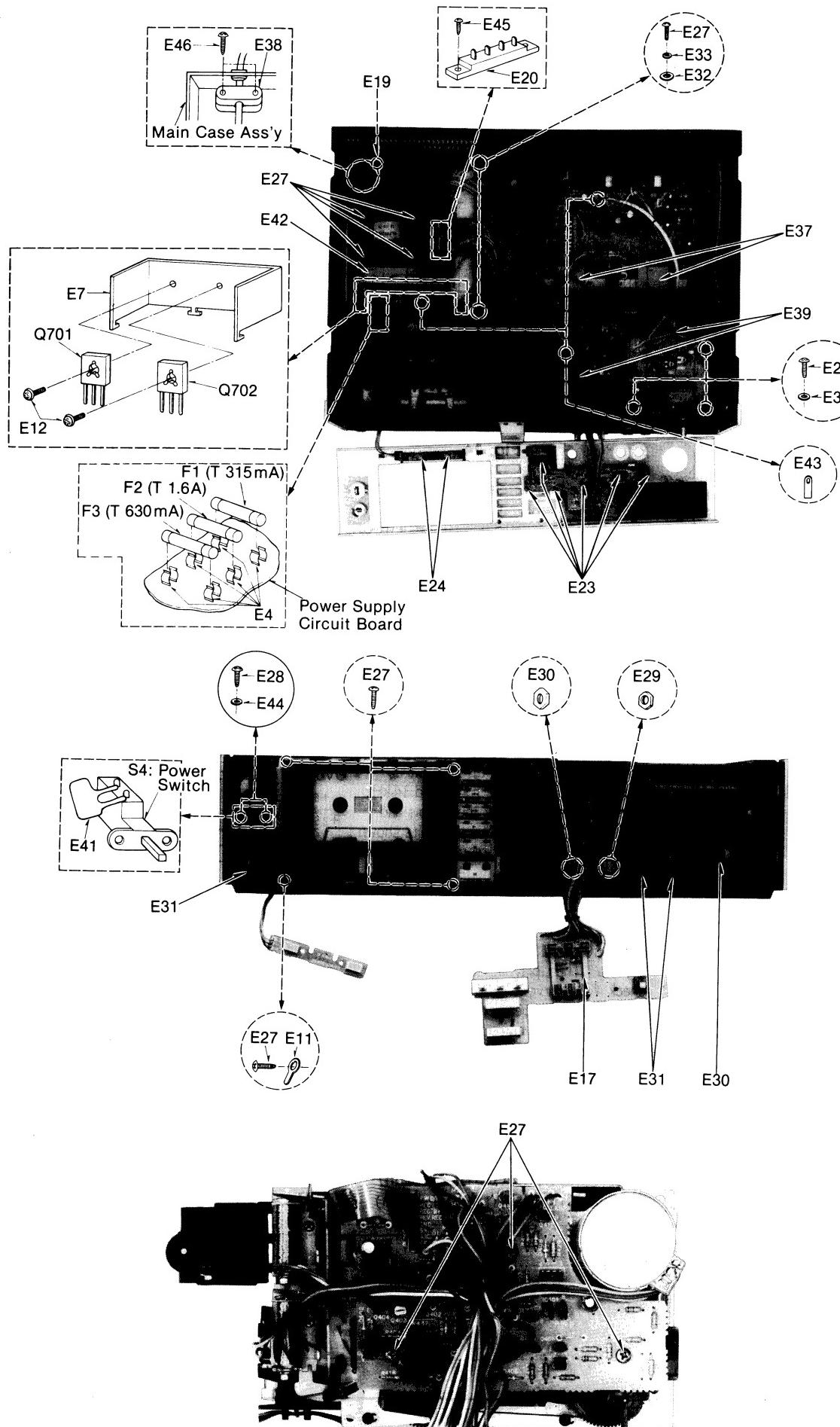
ITEM	MEASUREMENT & ADJUSTMENT									
	<p>Adjustment ①: When the curve exceeds the overall frequency response chart specifications (fig. 12) as shown in fig. 14.</p> <p>Adjustment ②: When the curve falls below the overall frequency response chart specifications (fig. 12) as shown in fig. 15.</p> <p>1) Increase bias current by turning volumes as follows, Forward... VR13 (L-CH), VR14 (R-CH) Reverse... VR15 (L-CH), VR16 (R-CH) (See fig. 1 on page 7.)</p> <p>2) Repeat steps 6 and 7 to confirm. (Proceed to steps 8, 9, 10 and 11 if the curve is now within the charted specifications in fig. 12.)</p> <p>3) If the curve still exceeds the specifications (fig. 12), increase bias current further and repeat steps 6 and 7.</p> <p>8. Place UNIT into CrO₂ tape mode.</p> <p>9. Change test tape to QZZCRX, and record 50Hz, 100Hz, 200Hz, 500Hz, 1kHz, 4kHz, 8kHz, 10kHz, 12.5kHz and 14kHz signals. Then, playback the signals and check if the curve is within the limits shown in the overall frequency response chart for CrO₂ tapes (fig. 16).</p> <p>10. Place UNIT into metal tape mode change test tape to QZZCRZ, and record 50Hz, 100Hz, 200Hz, 500Hz, 1kHz, 4kHz, 8kHz, 10kHz, 12.5kHz and 14kHz signals. Then, playback the signals and check if the curve is within the limits shown in the overall frequency response chart for metal tapes (fig. 16).</p> <p>11. Confirm that bias currents are approximately as follows when the UNIT is set at different tape mode. * Read voltage on VTVM and calculate bias current by following formula: Bias current (A) = $\frac{\text{Value read on VTVM (V)}}{10 (\Omega)}$</p> <table border="1"> <tr> <td>Standard value:</td> <td>around 400μA (Normal position)</td> <td>Forward... TP1 (L-CH) and TP2 (R-CH)</td> </tr> <tr> <td></td> <td>around 600μA (CrO₂ position)</td> <td>Reverse... TP3 (L-CH) and TP4 (R-CH)</td> </tr> <tr> <td></td> <td>around 950μA (Metal position)</td> <td></td> </tr> </table> <p>Fig. 14</p> <p>Fig. 15</p> <p>Fig. 16</p>	Standard value:	around 400μA (Normal position)	Forward... TP1 (L-CH) and TP2 (R-CH)		around 600μA (CrO ₂ position)	Reverse... TP3 (L-CH) and TP4 (R-CH)		around 950μA (Metal position)	
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	around 950μA (Metal position)									

ITEM	MEASUREMENT & ADJUSTMENT
H Overall gain Condition: * Record/playback mode (Forward/reverse) * Normal tape mode * Input level controls... MAX * Output level control... MAX * Standard input level: MIC -72 ± 3 dB LINE IN -24 ± 3 dB	<p>1. Test equipment connection is shown in fig. 17.</p> <p>2. Place UNIT into normal tape mode, and load the test tape (QZZCRA).</p> <p>3. Place UNIT into record mode.</p> <p>4. Supply 1kHz signal (-24 dB) from AF oscillator, through ATT to LINE IN.</p> <p>5. Adjust ATT until monitor level at LINE OUT becomes 0.7V.</p> <p>6. Playback recorded tape, and make sure the value at LINE OUT on VTVM becomes 0.7V.</p> <p>7. If measured value is not 0.7V, adjust the following VR. Forward... VR7 (L-CH), VR8 (R-CH) Reverse... VR9 (L-CH), VR10 (R-CH)</p> <p>8. Repeat from step (2).</p>
E Equipment: * VTVM * AF oscillator * ATT * Oscilloscope * Resistor (600Ω) * Test tape (reference blank tape) ... QZZCRA for Normal	
I Fluorescent meter Condition: * Record mode * Normal tape mode * Input level controls... MAX * Output level control... MAX	<p>1. Test equipment connection is shown in fig. 17.</p> <p>2. As shown in fig. 18, connect the base of Q303 and ground.</p> <p>3. Supply 1kHz signal (-24 dB) to the LINE IN jack, then press the record button.</p> <p>4. Adjust the ATT so that the output level at LINE OUT jack becomes 0.7V (The input level at this condition is termed the standard input level).</p> <p>5. Adjustment at "-20dB": A. Adjust the ATT so that input level is -20 dB below standard recording level. B. Adjust VR301 so that the -20 dB segment lights up in the -20 ± 0.8 dB range (L-CH ONLY) (See fig. 19).</p> <p>6. Adjustment at "0dB": A. Adjust the ATT so that the output level at LINE OUT jack becomes 0.7V (The input level at this condition is termed the standard input level). B. Adjust VR302 so that the +1 dB segment lights up in the 0 ± 0.2 dB range of the standard input level (See fig. 20).</p> <p>7. Repeat twice between steps 5 and 6 above.</p> <p>8. Adjust ATT and check that all segments light up when an input signal level is increased to 10 dB higher than the standard input level (See fig. 21).</p>
D Dolby NR circuit Condition: * Record mode * Dolby NR switch... IN/OUT * Input level controls... MAX	<p>1. Test equipment connection is shown in fig. 22.</p> <p>2. Place UNIT into record mode, set the Dolby NR switch to OUT position and supply to LINE IN to obtain -34.5 dB at TP9 (L-CH), TP10 (R-CH) (frequency 5 kHz).</p> <p>3. Confirm that the value at IN position is 8 (± 2.5) dB greater than the value at OUT position of Dolby NR switch.</p>
K Photo sensor circuit	<p>NOTE: When adjusting the photo sensor circuit, leave the front panel, cassette lid and indication plate in place. (External light can cause the photo sensor in the cassette holder to malfunction and makes accurate adjustment impossible.)</p> <p>Sensitivity adjustment Some malfunctions, such as tape reverse or auto stop, may sometimes occur during tape travel according to type and make of tape. If the trouble is caused only by tape wrinkles, perform the following adjustments.</p> <ol style="list-style-type: none"> 1. While playing the section causing malfunction, adjust VR801 so that normal operation is obtained. (shown in fig. 1) 2. Then play the leader tape section and check for normal operation (that tape reverse and auto stop are eliminated).

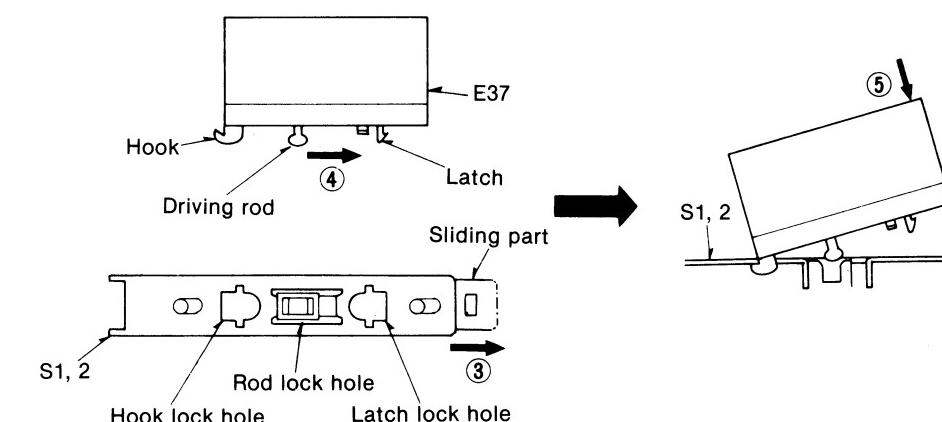
ELECTRICAL PARTS LOCATION



E37 Plunger removal
• Unsolder four terminal direction of arrows ①

**E37 Plunger removal**

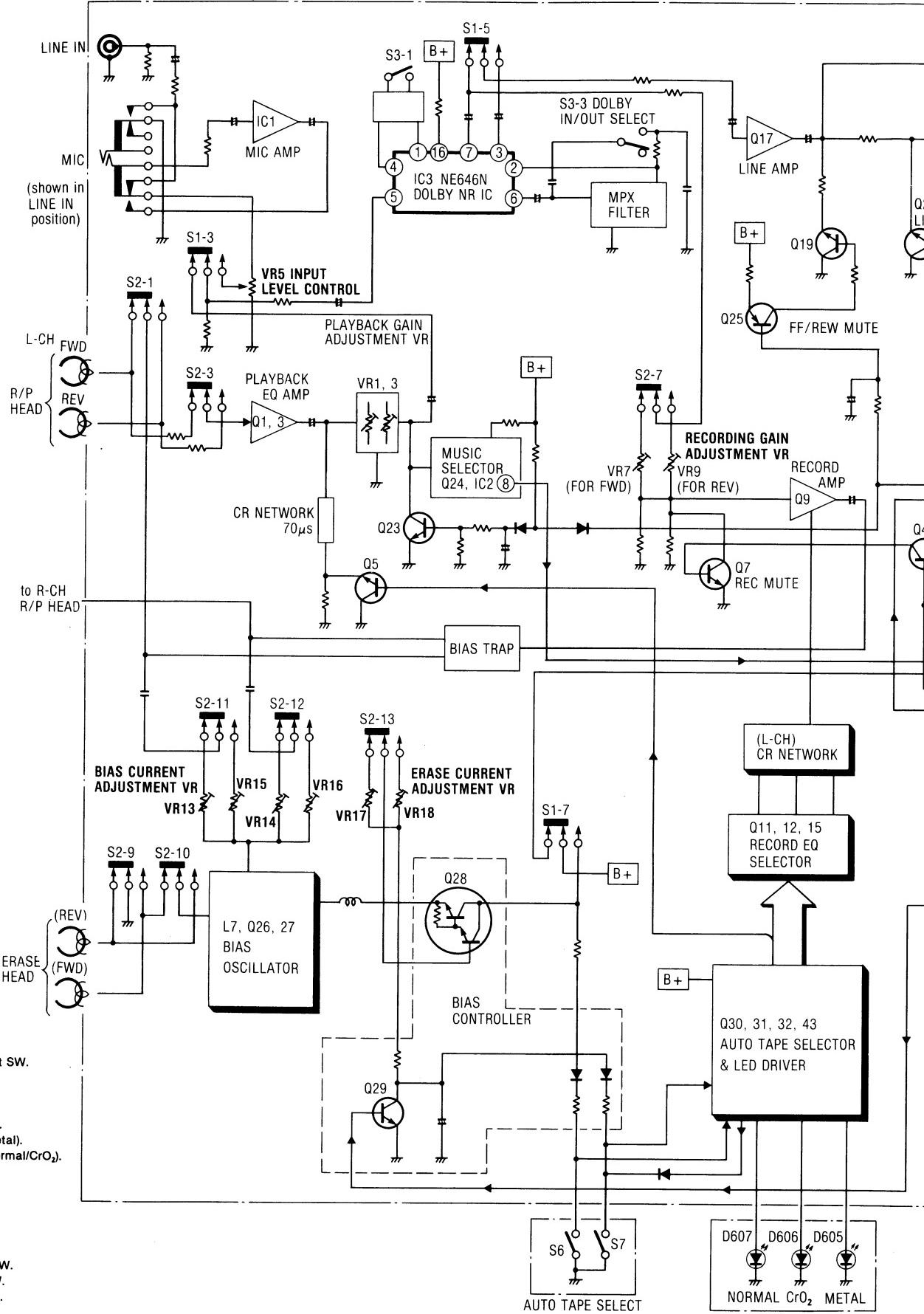
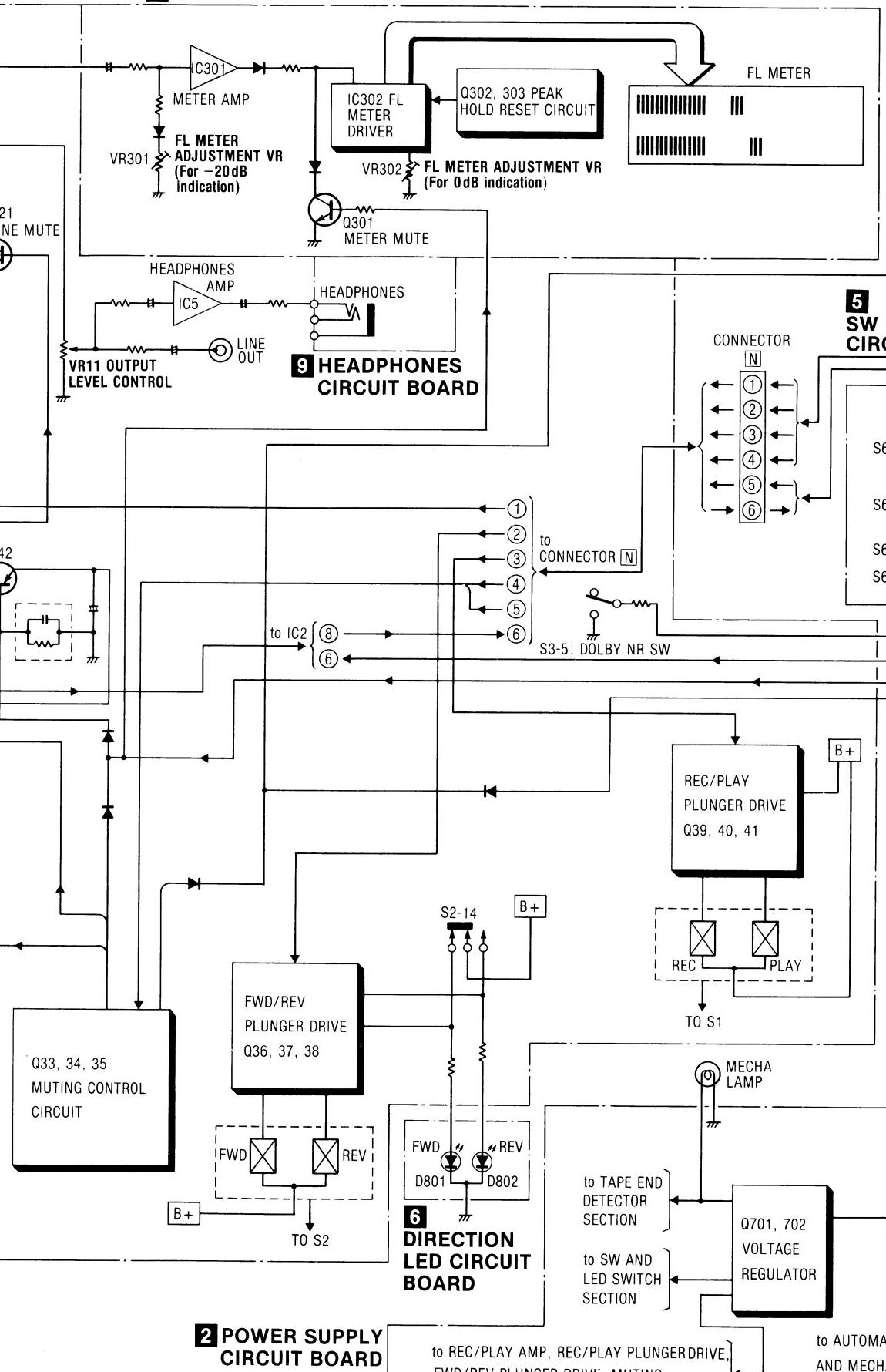
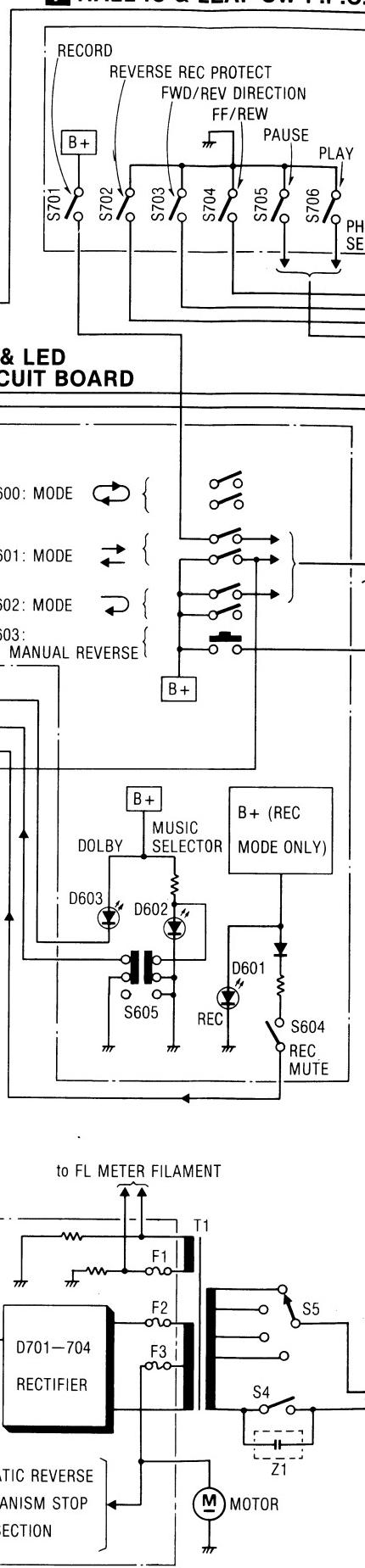
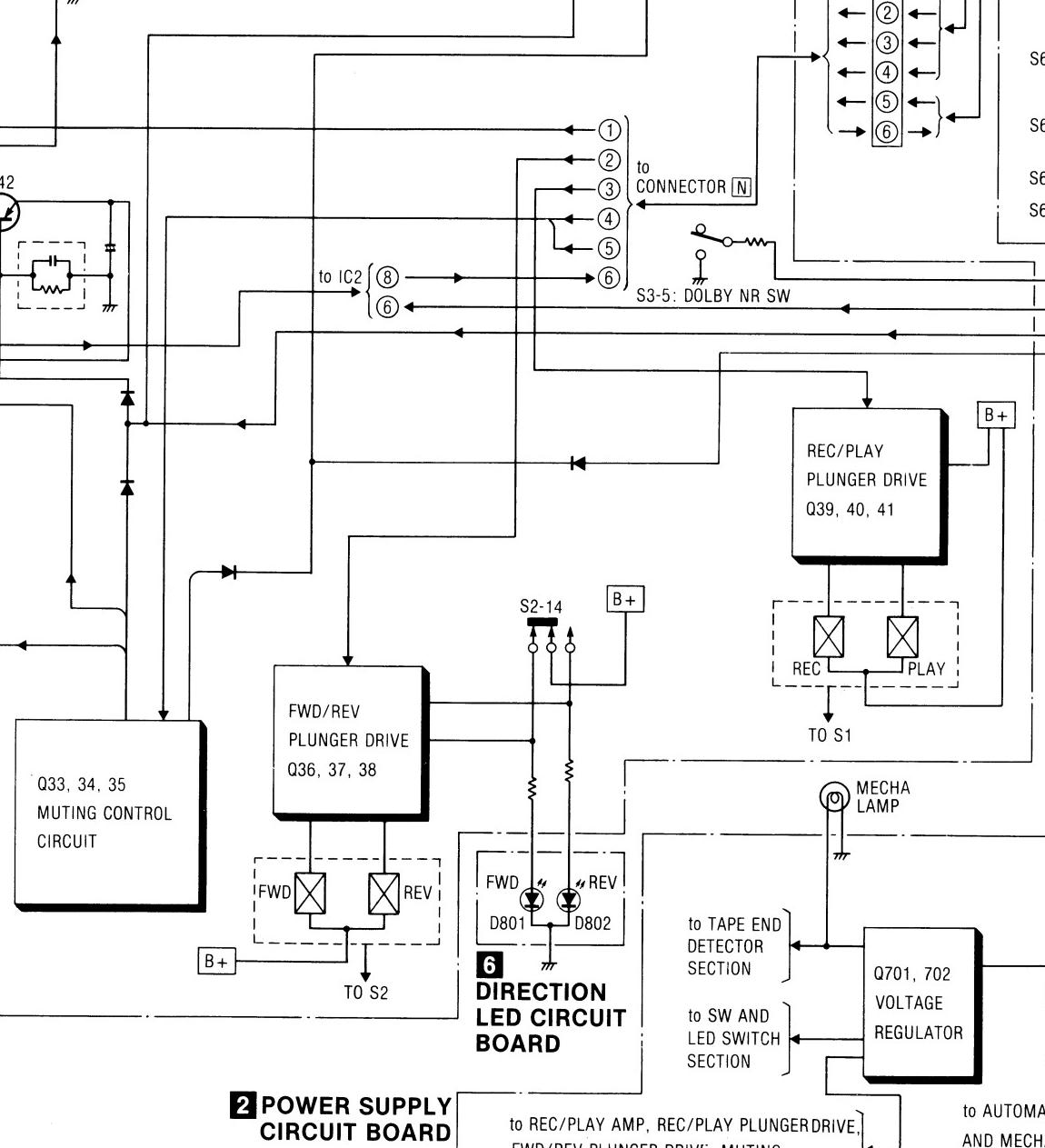
- Unsolder four terminals, and move the plunger in the direction of arrows ① and ② in order.

**E37 Plunger mounting**

- Move S1 and 2 sliding part in the direction of arrow ③ and the driving rod in the direction of arrow ④.
- Insert plunger hook into its lock hole and push the plunger down in the direction of arrow ⑤.
- Resolder four plunger terminals.

REPLACEMENT PARTS LIST
Important safety notice
Components identified by Δ mark have special characteristics important for safety.
When replacing any of these components, use only manufacturer's specified parts.

Ref. No.	Part No.	Part Name & Description
ELECTRICAL PARTS		
E1	QWY4130Y	Record/Playback Head (Forward)
E2	QWY4130YE	Record/Playback Head (Reverse)
E3	QWY2148Y	Erase Head
E4	Δ QTF1054	Fuse Holder
E5	QTSM0062	Earth Plate (for Input VR)
E6	QTSM0063	Earth Plate (for Output VR)
E7	QTHM0015	Heat Sink
E8	QJP1921TN	3 Pin Post
E9	QJP1922TN	6 Pin Post
E10	QJT1061	Pin Terminal
E11	QTD1001	Lug Terminal
E12	XTN3+8B	Tapping Screw $\pm 3 \times 8$
E13	QJP1923TN	9 Pin Post
E14	QSFL005F	FL Meter
E15	QTSM0061	Meter Shield Case
E16	QTWM0037	Insulating Sheet
E17	OKJM0073	LED Holder
E18	Δ SJA88	AC Power Cord
E19	QBJ1425	Cord Bushing
E20	QJT4017	4 Pin Terminal
E21	QJC0025	Earth Plate-A
E22	XAMQ44S200	Pilot Lamp
E23	XTN26+8B	Tapping Screw $\pm 2.6 \times 8$
E24	XTN3+6B	Tapping Screw $\pm 3 \times 6$
E25	QJS1921TN	3 Pin Socket
E26	QJS1923TN	9 Pin Socket
E27	XTN3+10B	Tapping Screw $\pm 3 \times 10$
E28	XSN3+6S	Screw $\pm 3 \times 6$
E29	XNS8	Nut 8 ϕ
E30	XNS9	Nut 9 ϕ
E31	QNQ1070	Nut
E32	QBK7178	Washer
E33	XWG3	Washer 3 ϕ
E34	XWA3B	"
E35	QJS1922TN	6 Pin Socket
E36	QJT1054	Contact
E37	EMR2012	Plunger
E38	QTD1164	Cord Clamper
E39	RHR993ZA	Wire Clamper
E40	QTSM0067	Shield Plate (for MIC Jack)
E41	QTW1195	Spark Killer Cover
E42	QMAM0149	Transformer Angle
E43	QJT1067	Pin Terminal
E44	XWC3B	Washer 3 ϕ
E45	XTN3+12B	Tapping Screw $\pm 3 \times 12$
E46	XTN3+16B	Tapping Screw $\pm 3 \times 16$

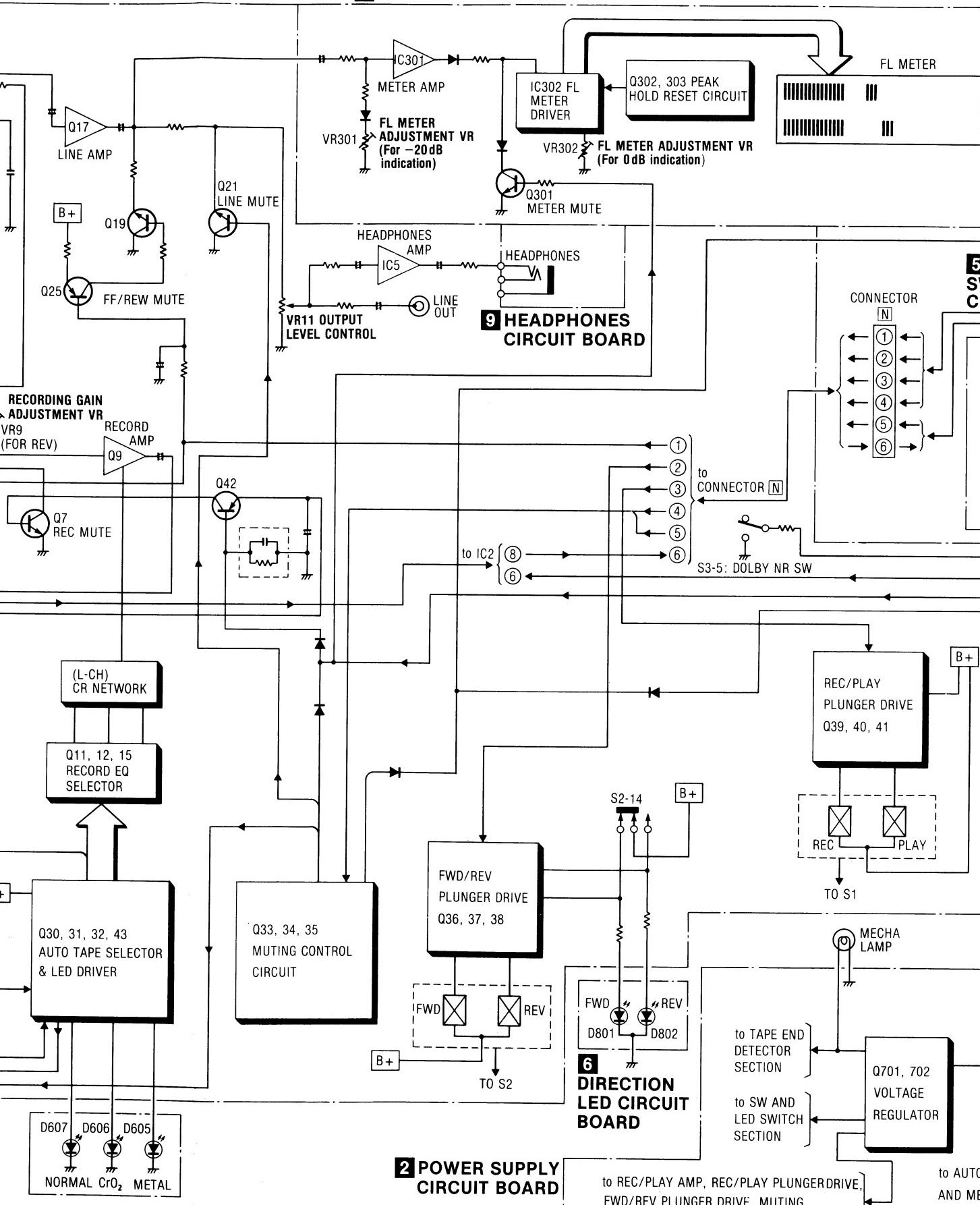
BLOCK DIAGRAM**1 MAIN CIRCUIT BOARD****8 FL METER CIRCUIT BOARD****7 HALL IC & LEAF SW F.P.C.****9 HEADPHONES CIRCUIT BOARD****2 POWER SUPPLY CIRCUIT BOARD**

to REC/PLAY AMP, REC/PLAY PLUNGER DRIVE,
FWD/REV PLUNGER DRIVE, MUTING,
AUTO TAPE SELECTOR, BIAS OSC SECTION

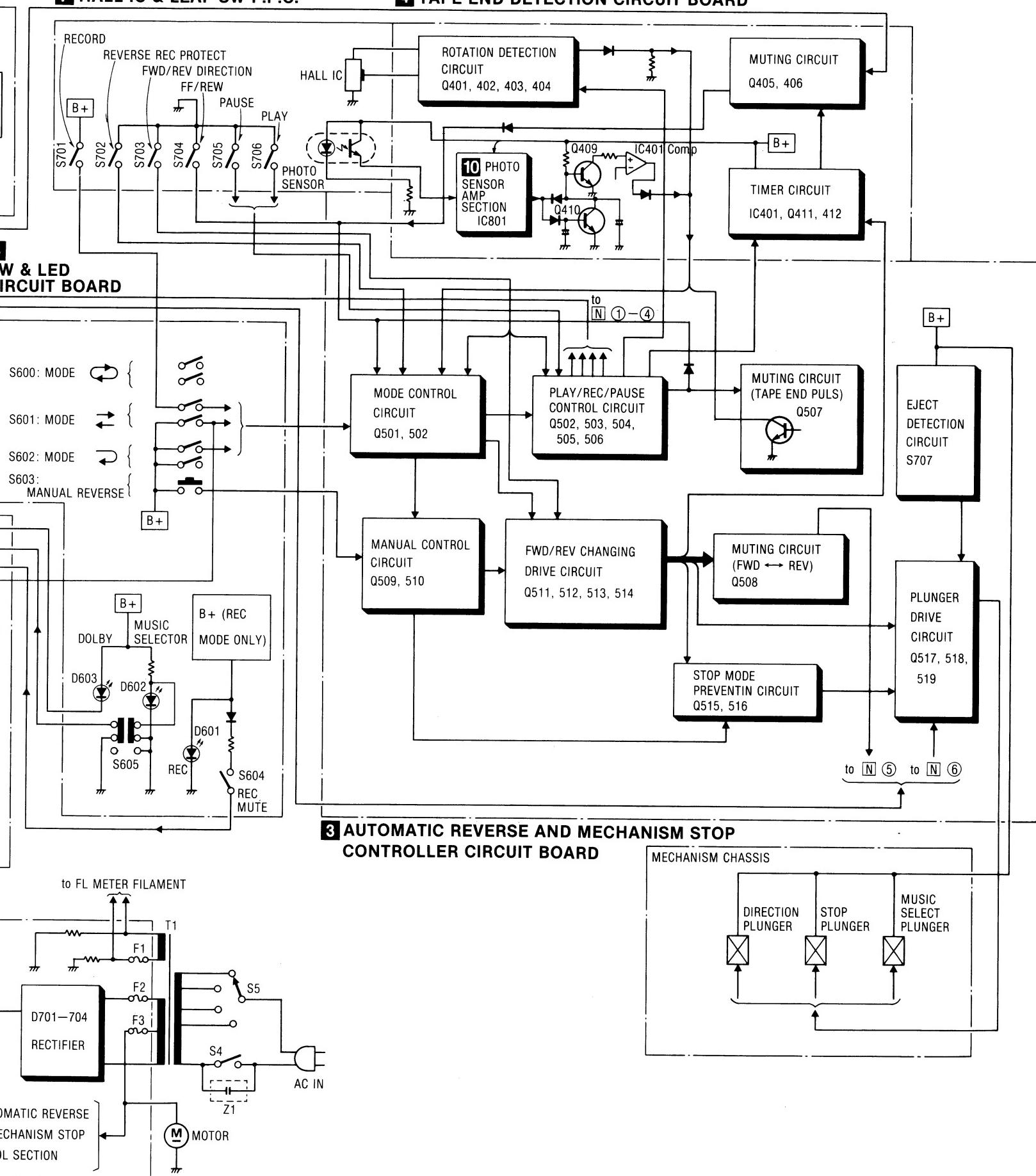
to AUTOMATIC REVERSE
AND MECHANISM STOP
CONTROL SECTION

NOTES:
 S1 Record/Playback select SW.
 S2 FWD/REV select SW.
 S3 Dolby NR IN/OUT SW.
 S4 Power ON/OFF SW.
 S5 Power voltage selector.
 S6 Tape detection SW (Metal).
 S7 Tape detection SW (Normal/CrO₂).
 S600 Mode SW ().
 S601 Mode SW ().
 S602 Mode SW ().
 S603 Manual Reverse SW.
 S604 Rec Mute SW.
 S605 Music select SW.
 S701 Rec plunger ON/OFF SW.
 S702 Reverse rec protect SW.
 S703 FWD/REV direction SW.
 S704 FF/Rew mode SW.
 S705 Pause mode SW.
 S706 Play mode SW.
 S707 Eject detection SW.

8 FL METER CIRCUIT BOARD



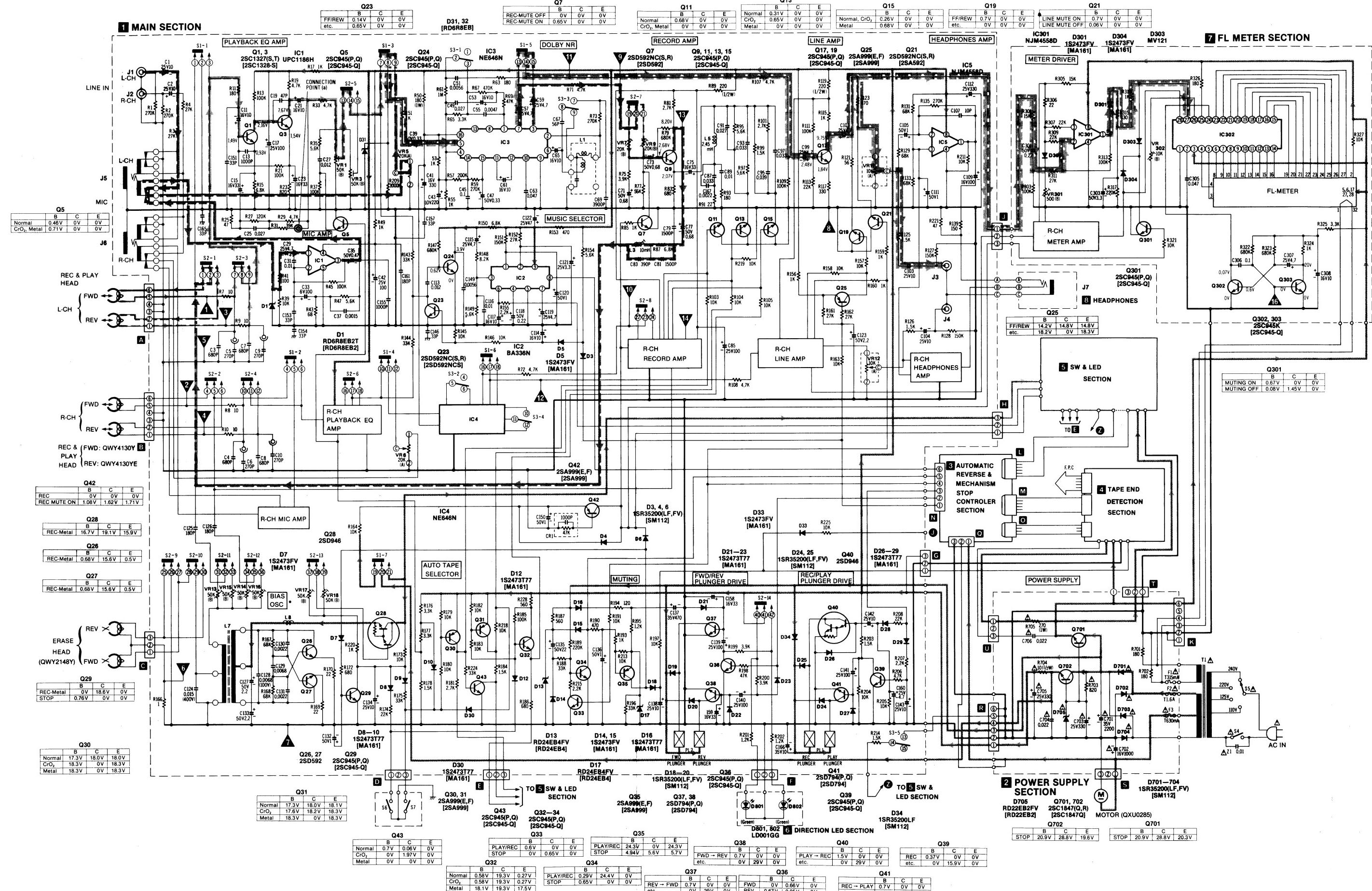
7 HALL IC & LEAF SW F.P.C.



2 POWER SUPPLY CIRCUIT BOARD

to REC/PLAY AMP, REC/PLAY PLUNGERDRIVE,
FWD/REV PLUNGER DRIVE, MUTING,
AUTO TAPE SELECTOR, BIAS OSC SECTION

SCHEMATIC DIAGRAM



IC1 UPC1

IC3, 4 NE646

The PS block diagram shows a central rectangular box labeled 'PS'. On its left side, there are three circular terminals connected to a vertical bus bar. On its right side, there are two circular terminals connected to another vertical bus bar. Below the PS box, the word 'AMP' is written above a triangular symbol representing an operational amplifier. To the right of the PS box, the letters 'A' and 'B' are positioned above two small rectangular boxes.

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IN
NP

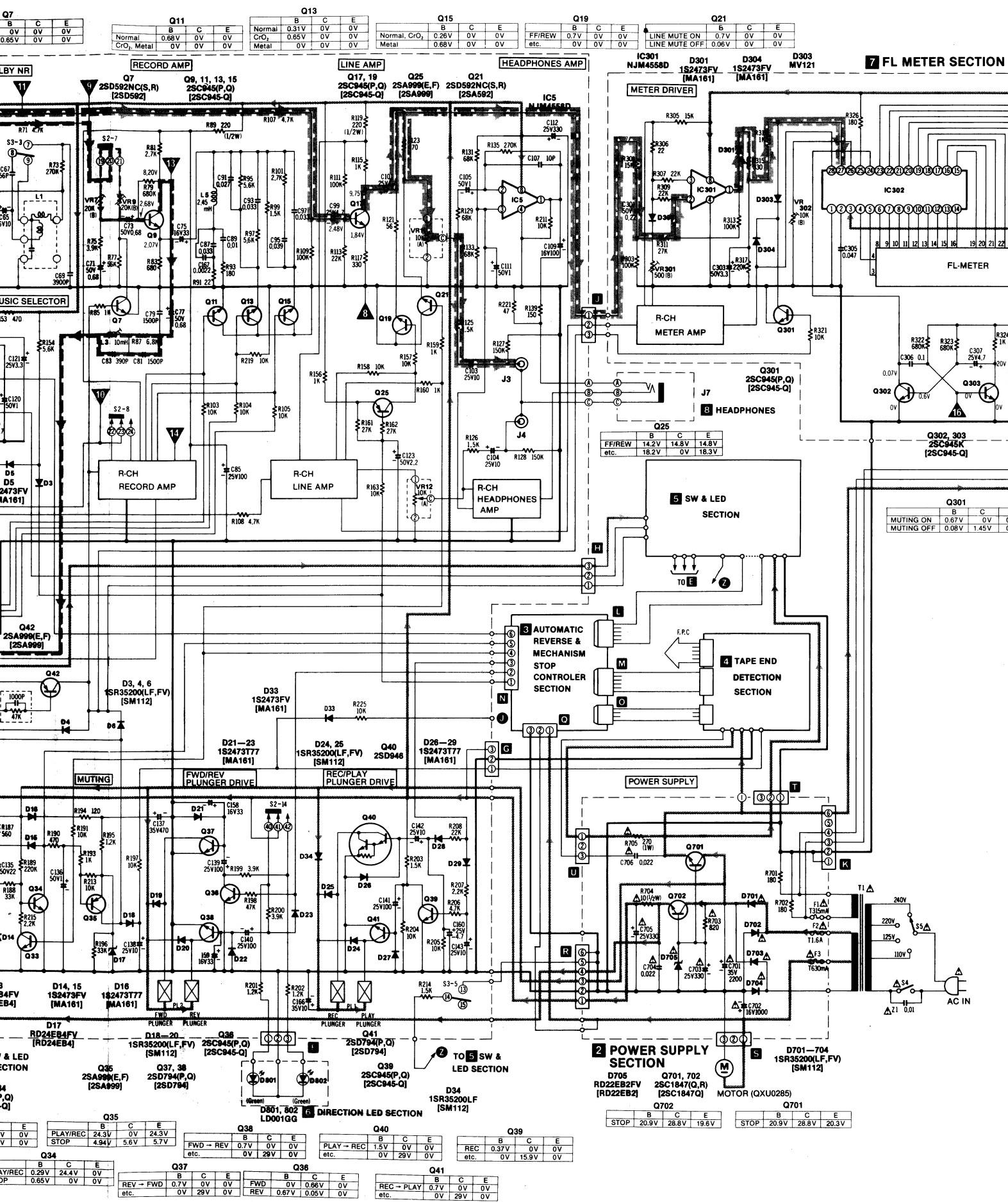
IC3

Vcc N M
Vcc L (

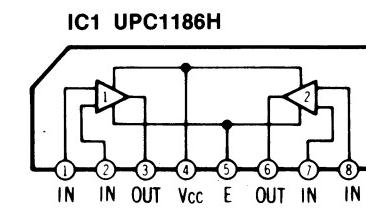
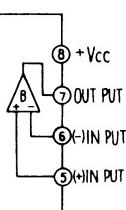
Ch 1
Ch 2
0.06 Adj

RESET (

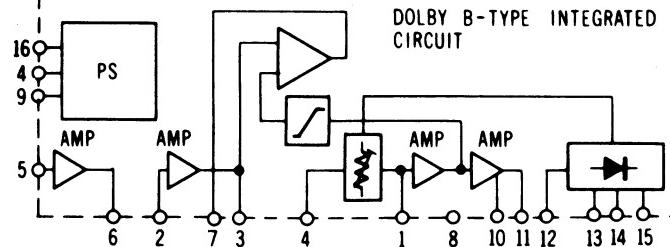
OUT G1
Ch1



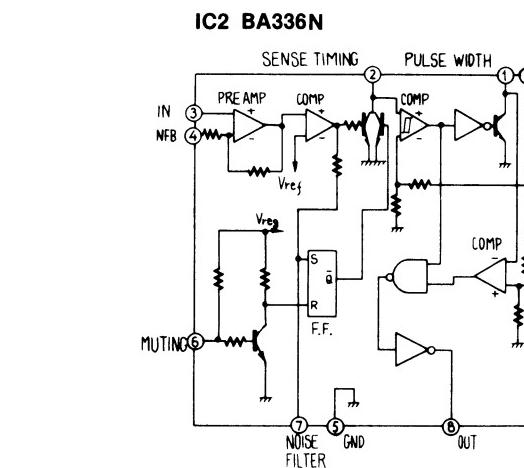
EQUIVALENT CIRCUIT

IC5 NJM4556D
IC301, 401, 801 NJM4558D

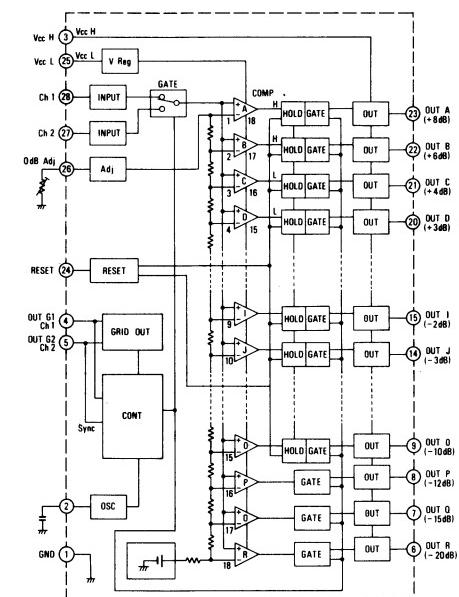
IC3, 4 NE646N



DOLBY B-TYPE INTEGRATED CIRCUIT



IC302 AN6870



NOTES:

- S1 Record/Playback select SW (shown in playback position).
- S2 FWD/REV select SW (shown in forward position).
- S3 Dolby NR IN/OUT SW (shown in OUT position).
- S4 Power ON/OFF SW (shown in OFF position).
- S5 Power voltage selector.
- S6 Tape detection SW (Metal) (shown in OFF position).
- S7 Tape detection SW (Normal/CrO₂) (shown in OFF position).
- VR1—VR4 Playback gain adjustment VR.
- VR7—VR10 Recording gain adjustment VR.
- VR11, 12 Output level controls.
- VR13—VR16 Bias current adjustment VR.
- VR17, 18 Erase current adjustment VR.
- VR301 FL meter adjustment VR (-20dB indication).
- VR302 FL meter adjustment VR (0dB indication).
- Connection points (a) and (a')..... Playback frequency response adjustment points.
- Resistance is in ohms (Ω) 1/4 watt unless specified otherwise. 1K = 1,000Ω, M = 1,000KΩ.
- Capacity is in micro-farads (μF) unless specified otherwise. P = Pico-farads.
- The mark (▼) shows test point e.g. ▼ = Test point 1.
- (—) indicates B+ (bias).
- (—) indicates the flow of playback signal (Forward).
- (—) indicates the flow of playback signal (Reverse).
- (—) indicates the flow of recording signal (Forward).
- (—) indicates the flow of recording signal (Reverse).
- Important safety notice
- Components identified by Δ mark have special characteristics important for safety. When replacing any of these components, use only manufacturer's specified parts.
- Values indicated in [] are DC voltage between the chassis and electrical parts.
- All voltage values shown in circuitry are under no signal condition. Unless otherwise specified, voltage measurement conditions are that tape travel is at STOP, tape mode at NORMAL, and Dolby NR switch at OFF.
- REC Voltage at record mode.
- PLAY Voltage at playback mode.
- REC/PLAY Voltage at record/playback mode.
- Normal Voltage at Normal tape mode.
- CrO₂ Voltage at CrO₂ tape mode.
- Metal Voltage at Metal tape mode.
- FWD Voltage at Forward mode.
- REV Voltage at Reverse mode.
- REC-MUTE Voltage at record mode (Rec mute: ON).
- FWD → REV Voltage at switching from FWD to REV modes.
- REV → FWD Voltage at switching from REV to FWD modes.
- MUTING ON Voltage at muting mode
(During power off muting circuit is operating).
- MUTING OFF Voltage at non muting mode
(During power off muting circuit is not operating).
- Voltages of Q302 and Q303 are taken when Q303 base is grounded.
- Described in the schematic diagram are two types of numbers; the supply parts number and production parts number for transistors and diodes. One type of number is used for supply parts number and production parts number when they are identical.

e.g. Q1—4

- {2SD1011(S,R,T)} ← Production parts number
- {2SD1011S} ← Supply parts number
- {D309} ← Production parts number
- {QVD1S2473T} ← Supply parts numbers

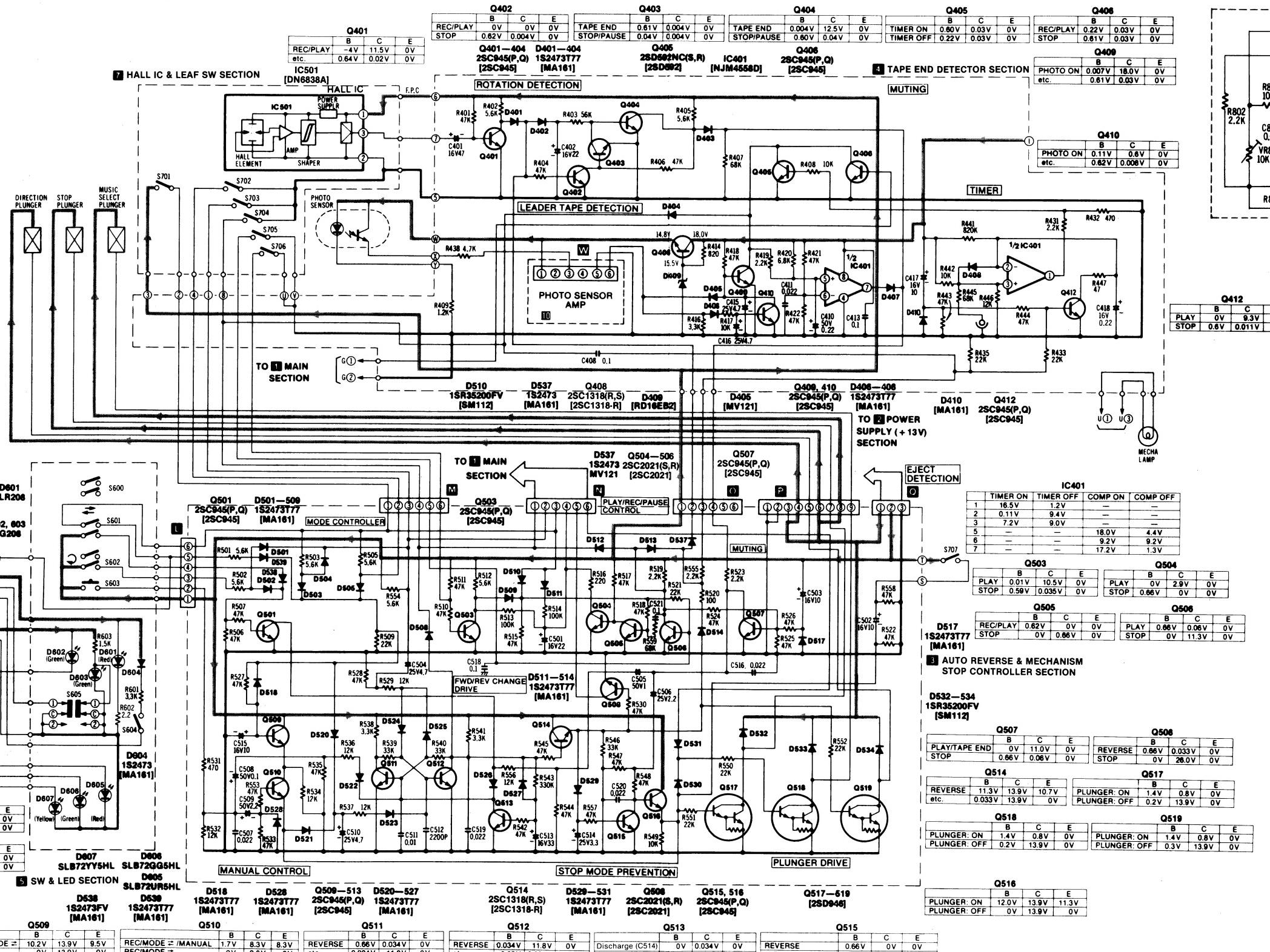
• The supply parts number is described alone in the replacement parts list.

• This schematic diagram may be modified at any time with the development of new technology.

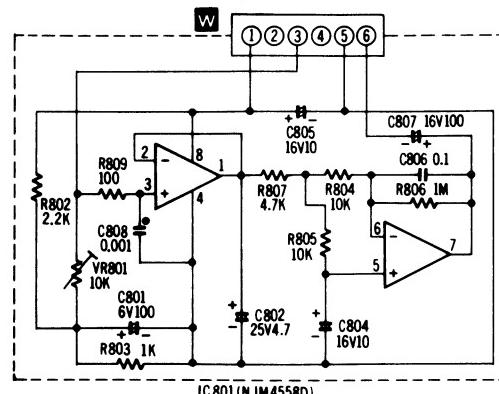
* Input level controls ... MAX
SPECIFICATIONS * Output level control ... MAX

Playback S/N ratio Test tape ... QZZCFM	Greater than 45 dB (without NAB filter)
Overall distortion Test tape	Less than 4%
... QZZCRA for Normal ... QZCZCRX for CrO ₂ ... QZZCRZ for Metal	
Overall S/N ratio Test tape ... QZZCRA	Greater than 43 dB (without NAB filter)

SCHEMATIC DIAGRAM



10 PHOTO SENSOR AMP SECTION



IC801 NJM4558D

	Normal	Metal
1	5.3V	4.9V
2	5.3V	4.9V
3	5.3V	4.9V
4	—	—
5	5.3V	4.9V
6	5.3V	4.9V
7	4.0V	3.7V
8	15.5V	15.5V

	PLAY	STOP
1	0V	0V

	PLAY	STOP
1	0V	0V

	PLAY	STOP
1	0V	0V

	PLAY	STOP
1	0V	0V

	PLAY	STOP
1	0V	0V

	PLAY	STOP
1	0V	0V

	PLAY	STOP
1	0V	0V

	PLAY	STOP
1	0V	0V

	PLAY	STOP
1	0V	0V

	PLAY	STOP
1	0V	0V

	PLAY	STOP
1	0V	0V

	PLAY	STOP
1	0V	0V

	PLAY	STOP
1	0V	0V

	PLAY	STOP
1	0V	0V

	PLAY	STOP
1	0V	0V

	PLAY	STOP
1	0V	0V

	PLAY	STOP
1	0V	0V

	PLAY	STOP
1	0V	0V

	PLAY	STOP
1	0V	0V

	PLAY	STOP
1	0V	0V

	PLAY	STOP
1	0V	0V

	PLAY	STOP
1	0V	0V

	PLAY	STOP
1	0V	0V

	PLAY	STOP
1	0V	0V

	PLAY	STOP
1	0V	0V

	PLAY	STOP
1	0V	0V

	PLAY	STOP
1	0V	0V

	PLAY	STOP
1	0V	0V

	PLAY	STOP
1	0V	0V

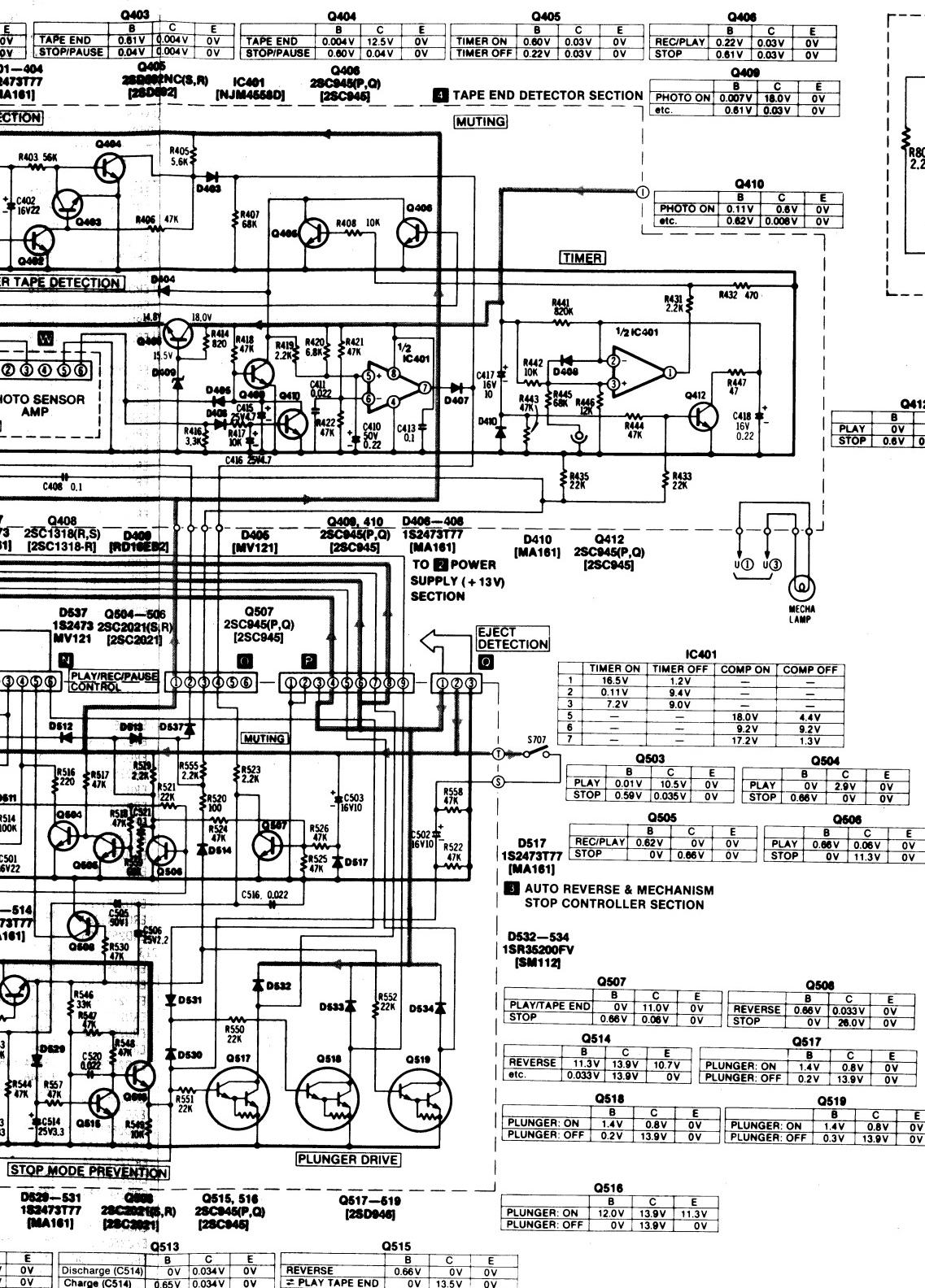
	PLAY	STOP
1	0V	0V

	PLAY	STOP
1	0V	0V

	PLAY	STOP

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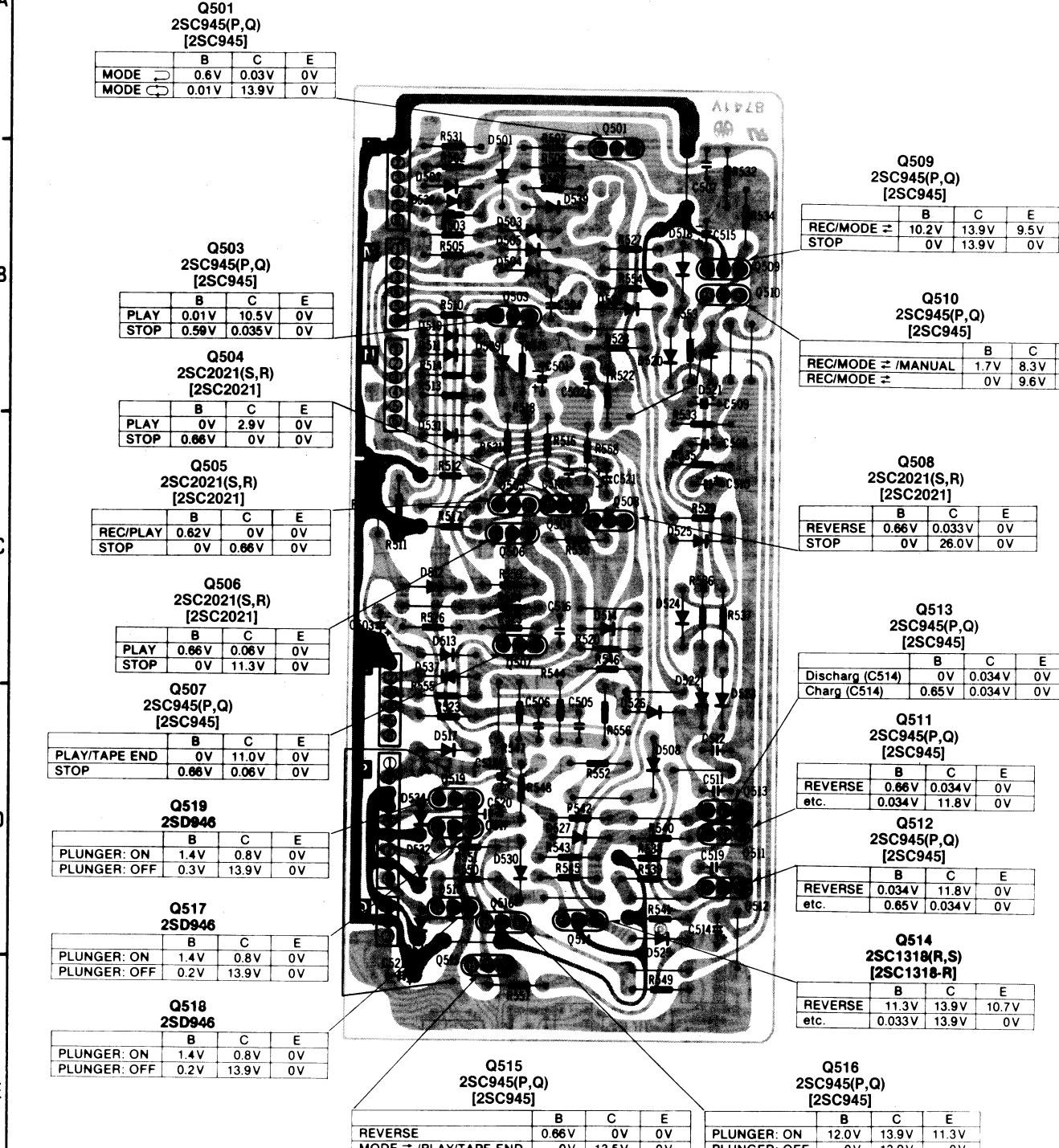
10 PHOTO SENSOR AMP SECTION



- STOP/PAUSE Voltage at stop/pause mode.
- TAPE END Voltage at tape end mode.
- MODE Voltage at mode (S600: ON).
- MODE Voltage at mode (S602: ON).
- TIMER ON Voltage when a high level output is given from the timer circuit.
- PHOTO ON Voltage during photo sensing.
- REC/MODE ≠/MANUAL Voltage when operation is switched to manual during recording in Mode ≠ (S601: ON).
- PLAY/TAPE END Voltage when the end of tape is playback.
- MODE ≠/PLAY/TAPE END Voltage when the end of tape is playback in Mode ≠ (S601: ON).
- REVERSE Voltage when tape travel is reversed.

CIRCUIT BOARDS

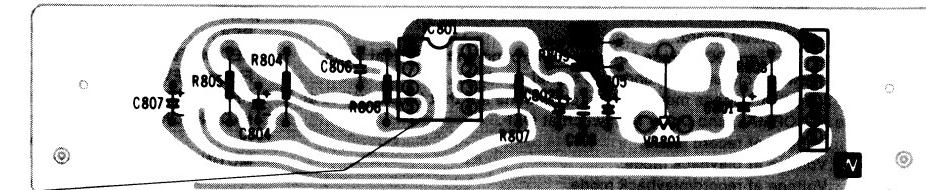
3 AUTO-REVERSE AND MECHANISM STOP CONTROLLER CIRCUIT BOARD



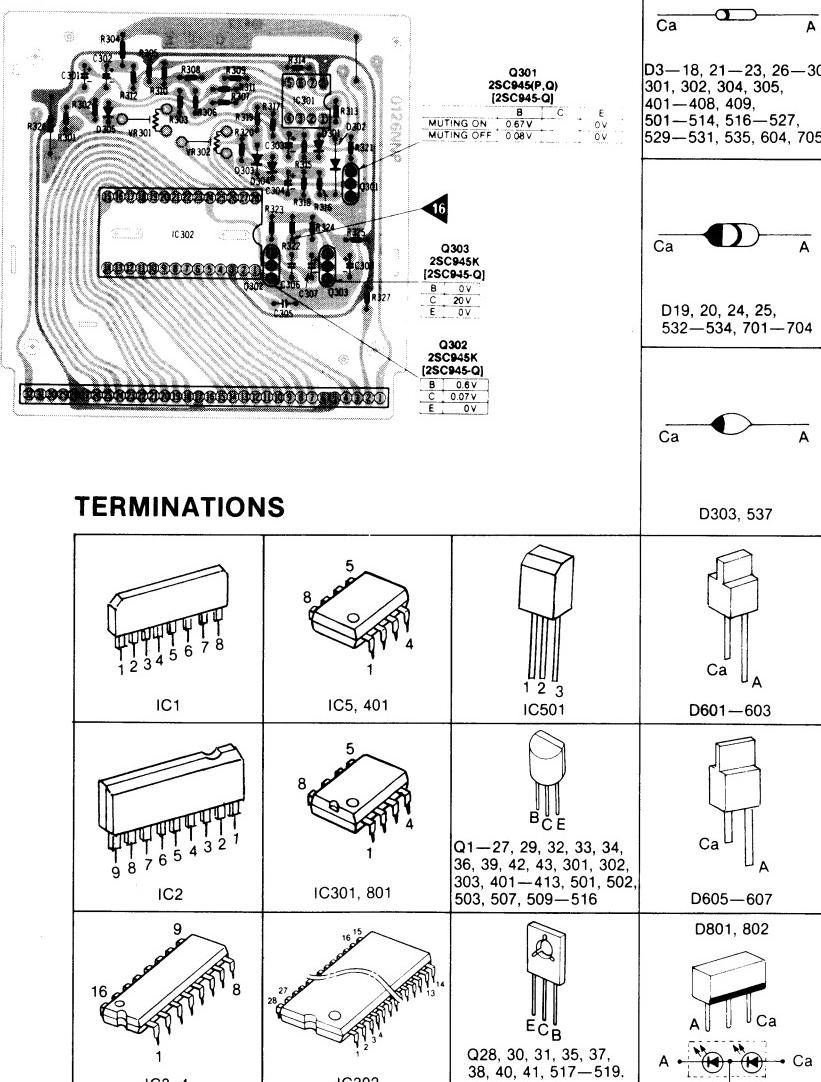
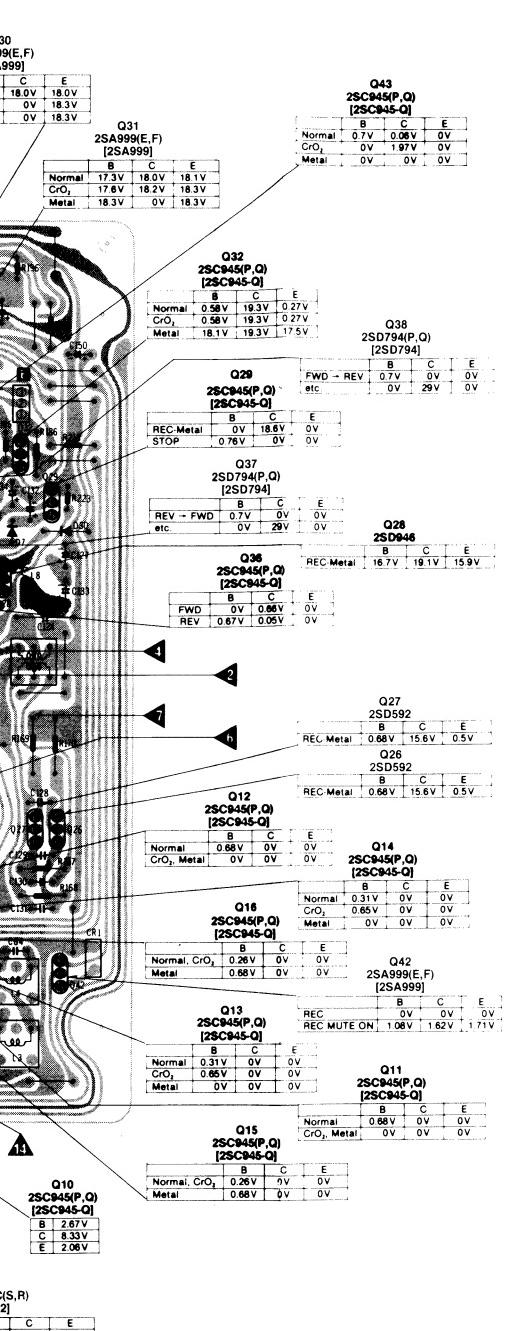
10 PHOTO SENSOR AMP CIRCUIT BOARD

IC801 NJM4558D

	Normal	Metal
1	5.3V	4.9V
2	5.3V	4.9V
3	5.3V	4.9V
4	—	—
5	5.3V	4.9V
6	5.3V	4.9V
7	4.0V	3.7V
8	15.5V	15.5V



2 POWER SUPPLY CIRCUIT BOARD



- Described in the circuit board diagram are two types of numbers; the supply parts number and production parts number for transistors. One type of number is used for supply parts number and production parts number when they are identical.

g. Q1
(2SB745(T,U) ← Production parts number

- The supply parts number is described alone in the replacement parts list.

- **This circuit board diagram may be modified at any time with the development of new technology.**

(mute: ON).

W to FWD modes.

V to FWD modes.

uit is operating).

References

Unit is not operating
3 base is grounded

base is grounded

NOTES: RESISTORS

CAPACITORS

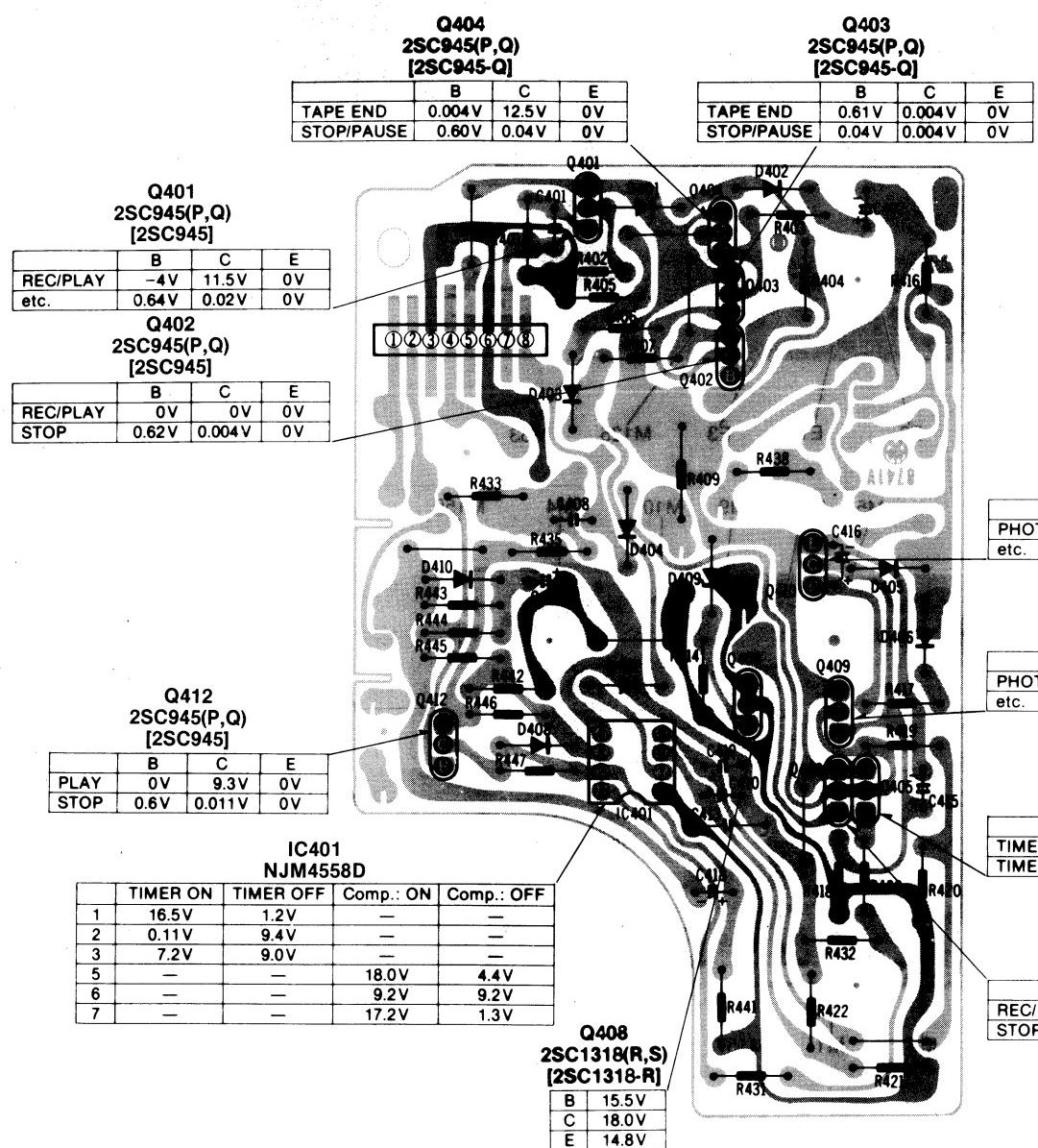
ic	ECE□Electrolytic
ic	ECEON ... Non polar electroly
ic	ECQSPolystyrene
ic	ECOSTantalum
ic	QCSTantalum
ter film	
ter film	
ondule	

REPLACEMENT PARTS LIST

A RELEASER PARTS LIST
Important safety notice
Components identified by **▲** mark have special characteristics important for safety.
When replacing any of these components, use only manufacturer's specified parts.

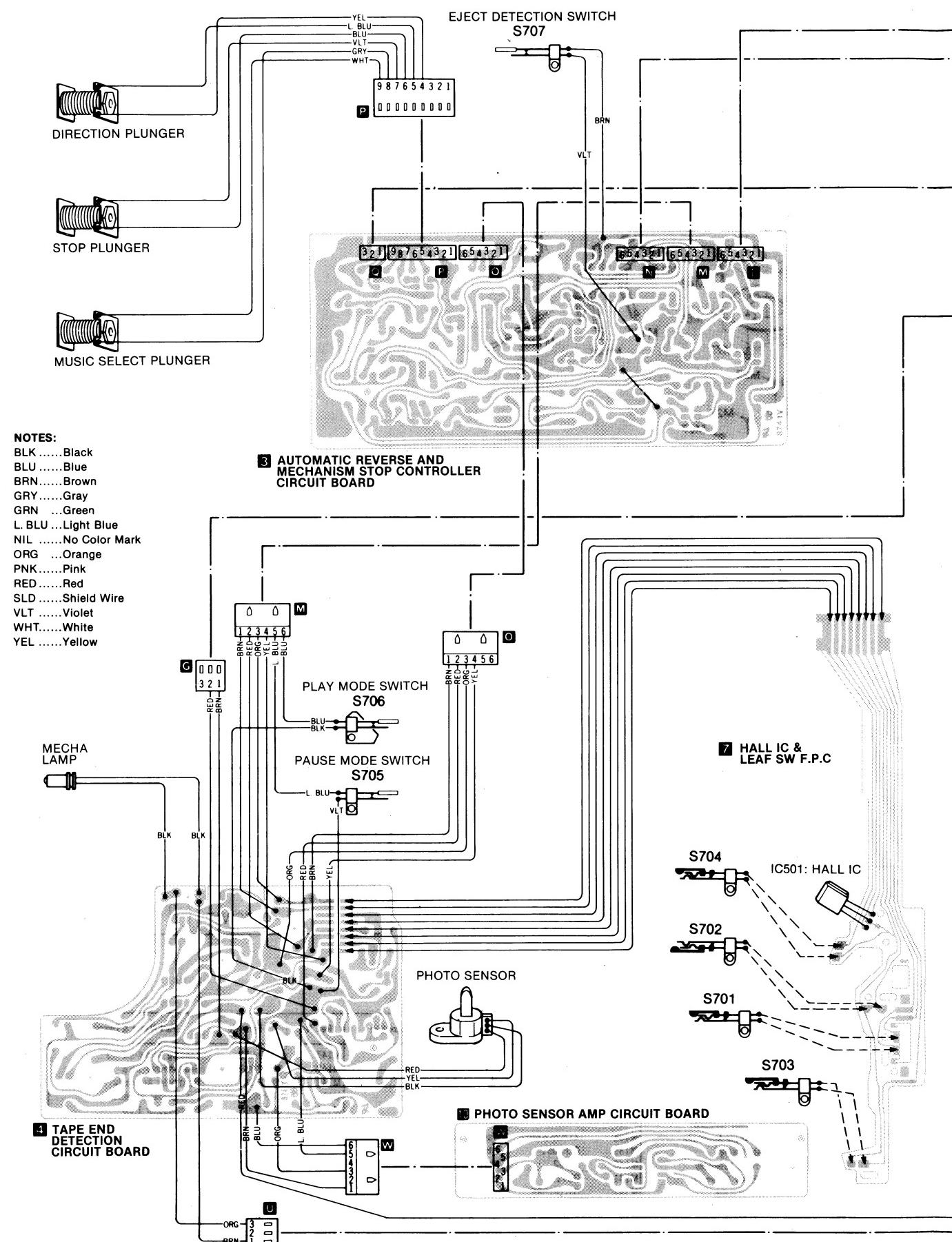
Ref. No.	Part No.	Ref. No.	Part No.	Ref. No.	Part No.	Ref. No.	Part No.	Ref. No.	Part No.	Ref. No.	Part No.	Ref. No.	Part No.	Ref. No.	Part No.
RESISTORS															
R1, 2	ERD25TJ274	R153	ERD25FJ471	R405	ERD25FJ562	VARIABLE RESISTORS		C117	ECEA1HS100	C806	ECQV05104JZ	D303	MV121	D537, 538, 539	
R3, 4	ERD25TJ273	R154	ERD25FJ562	R406	ERD25TJ473	R155	ERD25FJ222	R407	ERD25TJ683	R1, 2, 3, 4	EVNN4AA00B54	C118	ECEA50ZR22	D304, 305	MA161
R7, 8, 9, 10	ERD25FJ100	R156	ERD25FJ102	R408	ERD25FJ103	R157, 158	ERD25FJ103	R409	ERD50FJ122	R5, 6	EWJ5SAF22A24	C119	ECEA25Z4R7	C807	ECEA1E5101
R11, 12	ERD25FJ181	R159, 160	ERD25FJ102	R414	ERD25FJ821	R161, 162	ERD25TJ273	R416	ERD25FJ332	R11, 12	EVNN4AA00B24	C120	ECEA50Z1	D401, 402, 403, 404	MA161
R13, 14	ERD25TSJ104	R163, 164	ERD25FJ103	R417	ERD25FJ103	R163, 164	ERD25FJ103	R418	ERD25TJ473	R13, 14, 15, 16	QWKPEPA15A14	C121	ECEA50Z3R3	D405	MV121
R15, 16	ERD25FJ682	R166	ERD25FJ1R0	R419	ERD25FJ222	R167, 168	ERD25TJ683	R420	ERD25FJ682	R17, 18	EVNN4AA00B55	C122	ECEA1HS470	D406, 407, 408	MA161
R17, 18	ERD25FJ102	R168	ERD25FJ1R0	R421, 422	ERD25TJ473	R169, 170	ERD2FCG220	R421, 422	ERD25TJ473	R302	EVNN4AA00B54	C123	ECEA50Z2R2	CR1	EXRP102K473S
R19, 20	ERD25FJ472	R172	ERD25FJ681	R423	ERD25FJ222	R173	ERD25FJ103	R423	ERD25FJ471	R801	EVNN4AA00B54	C124	ECOF4153KZ	Z1	SPARK KILLER
R21, 22	ERD25TJ104	R174	ERD25TJ223	R433, 435	ERD25TJ223	R175	ERD25TJ333	R438	ERD25FJ472	C1, 2	ECEA1HS100	C125	ECKD1H181KB	D410	RD16EB2
R27, 28	ERD25TJ124	R176, 177	ERD25TJ333	R441	ERD25TJ824	R178	ERD25FJ152	R442	ERD25FJ103	C3, 4	ECKD1H681KB	C126	ECEA50Z2R2	D501, 502, 503, 504, 505	MA161
R29, 30	ERD25FJ472	R179, 180	ERD25FJ103	R443, 444	ERD25TJ473	R181	ERD25FJ272	R445	ERD25TJ683	C5, 6	ECCD1H271KB	C127	ECEA50Z2R2	Z1	TRANSISTORS
R31, 32	ERD25TJ393	R182, 183	ERD25FJ103	R446	ERD25TJ213	R184	ERD2FCG220P	R447	ERD2FCG220P	C7, 8	ECKD1H681KB	C128	ECQM1H682JZ	D508, 509	MA161
R33, 34	ERD25FJ472	R185	ERD25TJ104	R501, 502, 503, 504, 505	ERD25FJ562	R186	ERD25FJ681	R506, 507	ERD25TJ473	C9, 10	ECCD1H271KB	C129	ECQM1H222JZ	D510	SM112
R35, 36	ERD25FJ562	R187	ERD25FJ561	R509	ERD25TJ223	R188	ERD25TJ333	R510, 511	ERD25TJ473	C11, 12	ECEA1M10R	C130	ECQM1H222JZ	D511, 512, 513, 514	IC1, 2, 3, 4
R37, 38	ERD25TJ104	R189	ERD25TJ224	R512	ERD25FJ562	R190	ERD25FJ471	R513, 514	ERD25TJ104	C13, 14	ECKD1H102KB	C131	ECQM1H222JZ	D516, 517, 518	IC2
R39, 40	ERD25FJ103	R191	ERD25FJ103	R515	ERD25TJ473	R192	ERD25FJ102	R516	ERD25FJ221	C15, 16	ECEA1CS330	C132	ECEA50Z1	D520, 521, 522, 523, 524, 525,	IC3, 4
R41, 42	ERD25FJ101	R193	ERD25FJ102	R517, 518	ERD25TJ473	R194	ERD25FJ121	R519	ERD25FJ222	C17, 18	ECEA1HS101	C133	ECEA50Z2R2	D526, 527, 528, 529, 530, 531	IC301
R43, 44	ERD25FJ680	R195	ERD25FJ122	R520	ERD25FJ101	R196	ERD25TJ333	R521	ERD25TJ223	C19, 20	ECCD1H470KC	C134	ECEA1HS100	D532, 533, 534	NE646N
R45, 46	ERD25TJ104	R197	ERD25FJ103	R522	ERD25TJ473	R198	ERD25TJ473	R523	ERD25FJ222	C21, 22	ECEA1HS100	C135	ECEA1HS100	D533	NJM4556D
R47, 48	ERD25FJ562	R199	ERD25TJ333	R524, 525, 526, 527, 528	ERD25TJ473	R200	ERD25FJ392	R525	ERD25FJ222	C23, 24	ECEA1CS330	C136	ECEA1HS100	J1, 2, 3, 4	UPC1186H
R49	ERD25FJ102	R201	ERD25TJ224	R526	ERD25FJ122	R202	ERD25TJ472	R527	ERD25FJ222	C25, 26	EVQV05273JZ	C137	ECEA1HS100	J2	BA336N
R50	ERG1ANJ181	R203	ERD25FJ152	R528	ERD25TJ473	R204	ERD25TJ103	R529	ERD25TJ123	C27, 28	ECQM1H123JZ	C138	ECEA1HS100	J3	NE646N
R51, 52, 53, 54, 55, 56	ERD25CKG2003	R205	ERD25FJ122	R530	ERD25TJ473	R206	ERD25FJ472	R531	ERD25FJ471	C29, 30	ECEA50M4R7	C139	ECEA1HS100	J4	NJM4558D
R55, 60	ERD25TJ274	R207	ERD25FJ222	R532	ERD25TJ123	R208	ERD25TJ223	R533	ERD25TJ473	C31, 32	ECQM1H103JZ	C140	ECEA1HS100	J5	AN6870
R61, 62	ERD25TJ105	R209, 210	ERD25TJ105	R534	ERD25TJ223	R209, 210	ERD25TJ105	R535	ERD25TJ473	C33, 34	ECEA1AS101	C141	ECEA1HS100	J6	IC401
R63, 64	ERD25FJ181	R211, 212, 213	ERD25FJ103	R536, 537	ERD25TJ123	R214	ERD25FJ152	R538	ERD25FJ332	C35, 36	ECEA50ZR47	C142	ECEA1HS100	J7	IC501
R65, 66	ERD25FJ332	R215	ERD25FJ222	R539, 540	ERD25TJ333	R216	ERD25FJ102	R540	ERD25TJ473	C37, 38	ECQM1H152JZ	C143	ECEA1HS100	F1	XBAQ00006
R67, 68	ERD25TJ474	R217	ERD25FJ103	R541	ERD25FJ332	R218, 219	ERD25FJ103	R542	ERD25TJ473	C39, 40	ECEA50MR33R	C144	ECEA1HS100	F2	XBAQ0010
R69, 70	ERD25TJ473	R219, 200	ERD25FJ224	R543	ERD25TJ334	R220	ERD25FJ472	R544, 545	ERD25TJ473	C41	ECEA1CS331	C145	ECEA50ZR22	F3	XBAQ0008
R71, 72	ERD25FJ472	R221, 202	ERD25FJ122	R545	ERD25TJ332	R221, 222	ERD25FJ470	R546	ERD25TJ473	C43, 44	ECEA1HS101	C146	ECEA50Z1	JACKS	
R73, 74	ERD25TJ274	R223	ERD25FJ152	R547	ERD25TJ473	R224	ERD25TJ333	R548	ERD25TJ473	C45, 46	ECEA1AS221	C147	ECEA50Z2R2	J5, 6	QEJ5003H
R75, 76	ERD25FJ392	R225	ERD25TJ103	R549	ERD25TJ473	R225	ERD25TJ103	R550	ERD25TJ473	C47, 48	EVQV05104JZ	C148	ECEA1HS100	J7	QJA0262
R77, 78	ERD25TJ563	R226	ERD25FJ272	R551	ERD25FJ472	R226	ERD25FJ272	R552	ERD25FJ472	C49, 50	ECQM1S273JZ	C149	ECEA1HS100	FUSES	
R79, 80	ERD25TJ684	R227	ERD25FJ122	R553	ERD25TJ123	R227	ERD25FJ123	R554	ERD25TJ123	C51, 52	ECEA1AS101	C150	ECEA1HS100	F1	XBAQ00006
R81, 82	ERD25FJ272	R228	ERD25FJ102	R555	ERD25TJ473	R228	ERD25FJ561	R556	ERD25TJ561	C53, 54	ECEA1HS100	C151	ECEA1HS100	F2	XBAQ0010
R83, 84	ERD25FJ681	R229	ERD25TJ223	R557	ERD25TJ473	R229	ERD25TJ223	R558	ERD25TJ473	C55, 56	ECQM1H472JZ	C152	ECEA1HS100	F3	XBAQ0008
R85, 86	ERD25FJ102	R230	ERD25TJ223	R559	ERD25TJ473	R230	ERD25TJ103	R560	ERD25TJ473	C57, 58, 59, 60	ECQM1H472JZ	C153	ECEA1HS100	TRANSFORMER	
R87, 88	ERD25FJ682	R231	ERD25TJ103	R561	ERD25TJ473	R231	ERD25TJ103	R562	ERD25TJ473	C61, 62	ECEA1HS100	C154	ECEA1HS100	T1	QLPD67EME
R89	ERD50FJ221	R232	ERD25TJ224	R563	ERD25TJ123	R232	ERD25TJ224	R564	ERD25TJ473	C63, 64	ECQM1H473JZ	C155	ECEA1HS100	S1	AC Power Transformer
R91, 92	ERD25FJ220	R233	ERD25FJ152	R565	ERD25TJ332	R233	ERD25FJ152	R566	ERD25TJ332	C65, 66	ECEA1HS100	C156	ECEA1HS100	S2	COILS
R93, 94	ERD25FJ331	R234	ERD25FJ222	R567	ERD25TJ473	R234	ERD25TJ472	R568	ERD25TJ472	C67, 68	ECCD1H560KC	C157	ECEA1HS100	L1, 2	QLM9Z9K
R95, 96, 97, 98	ERD25FJ562	R235	ERD25TJ102	R569	ERD25TJ473	R235	ERD25TJ102	R570	ERD25TJ473	C69, 70	ECQP1392JZ	C158	ECEA1HS100	L3, 4	OLQX1032W
R99, 100	ERD25FJ562	R236	ERD25TJ472	R571	ERD25TJ473	R236	ERD25TJ472	R572	ERD25TJ472	C71, 72, 73, 74	ECEA1HS100	C159	ECEA1HS100	L5, 6	OLQX2421Y
R101, 102	ERD25FJ272	R237	ERD25TJ333	R573	ERD25TJ473	R237	ERD25TJ473	R574	ERD25TJ473	C75, 76	EVNN4AA00B54	C160	ECEA1HS100	L7	QLB0202
R103, 104, 105	ERD25FJ103	R238	ERD25FJ561	R575	ERD25TJ473	R238	ERD25FJ561	R576	ERD25TJ473	C77, 78	ECEA1HS100	C161	ECEA1HS100	L8	QLQX2421Y
R107, 108	ERD25FJ472	R239	ERD25TJ103	R577	ERD25TJ473	R239	ERD25TJ103	R578	ERD25TJ473	C79, 80, 81, 82	ECQM1H152KB	C162	ECEA1HS100	SWITCHES	
R109, 110, 111, 112	ERD25TJ104	R240	ERD25TJ153	R579	ERD25TJ473	R240	ERD25TJ153	R580	ERD25TJ473	C79, 80, 81, 82	ECEA1HS100	C163	ECEA1HS100	S1	Slide Switch
R113, 114	ERD25TJ223	R241	ERD25TJ103	R581	ERD25TJ473	R241	ERD25TJ103	R582	ERD25TJ473	C83, 84	ECQP1391JZ	C164	ECEA1HS100	S2	Slide Switch
R115, 116	ERD25FJ102	R242	ERD25TJ224	R583	ERD25TJ123	R242	ERD25TJ224	R584	ERD25TJ473	C85, 86	ECEA1ES101	C165	ECEA1HS100	S3	Slide Switch
R117, 118	ERD25FJ331	R243	ERD25FJ222	R585	ERD25TJ473	R243	ERD25FJ472	R586	ERD25TJ472	C87, 88	ECQM1H333JZ	C166	ECEA1HS100	S4	Slide Switch
R119	ERD50FJ221	R244	ERD25TJ224	R587	ERD25TJ473	R244	ERD25TJ472	R588	ERD25TJ472	C89, 90	ECQM1H273JZ	C167	ECEA1HS100	S5	Slide Switch
R121, 122	ERD25FJ560	R245	ERD25TJ223	R589	ERD25TJ473	R245	ERD25TJ472	R590	ERD25TJ472	C91, 92	ECEA1HS100	C168	ECEA1HS100	S6	Slide Switch
R123, 124	ERD25FJ471	R246	ERD25FJ102	R591	ERD25TJ473	R246	ERD25FJ102	R592	ERD25TJ473	C93, 94	ECQM1H333JZ	C169	ECEA1HS100	S7	Slide Switch
R125, 126	ERD25FJ152	R247	ERD25TJ103	R593	ERD25TJ473	R247	ERD25TJ103	R594	ERD25TJ473	C95, 96	ECQM1H393JZ	C170	ECEA1HS100	S8	Slide Switch
R127, 128	ERD25TJ154	R248	ERD25TJ561	R595	ERD25TJ473	R248	ERD25TJ561	R596	ERD25TJ473	C97, 98	ECQM1H333JZ	C171	ECEA1HS100	S9	Slide Switch
R129, 130, 131	ERD25FJ331	R249	ERD25TJ224	R597	ERD25TJ473	R249	ERD25TJ473	R598	ERD25TJ473	C99, 100, 101, 102	ECEA1HS100	C172	ECEA1HS100	S10	Slide Switch
R133	ERD25TJ683	R250	ERD25FJ102	R599	ERD25TJ473	R250	ERD25TJ473	R600	ERD25TJ473	C103, 104	ECEA1HS100	C173	ECEA1HS100	S11	Slide Switch
R135, 136	ERD25TJ274	R251	ERD25FJ103	R601	ERD25TJ473	R251	ERD25TJ473	R602	ERD25TJ473	C105, 106	ECEA1HS100	C174	ECEA1HS100	S12	Slide Switch
R139, 140	ERD25FJ151	R252	ERD25FJ102	R603	ERD25TJ473	R252	ERD25TJ473	R604	ERD25TJ473	C107, 108	ECCD1H100KC	C175	ECEA1HS100	S13	Slide Switch
R143, 144	ERD25TJ333	R253	ERD25FJ332	R605	ERD25TJ473	R253	ERD25TJ473	R606	ERD25TJ473	C109, 110	ECEA1ES101	C176	ECEA1HS100	S14	Slide Switch
R145, 146	ERD25FJ103	R254	ERD2FCG181	R607	ERD25TJ473	R254	ERD25TJ473	R608	ERD25TJ473	C111	ECEA50Z1	C177	ECEA1HS100	S15	Slide Switch
R147	ERD25FJ684	R255	ERD25FJ102	R609	ERD25TJ473	R255	ERD25TJ473	R610	ERD25TJ473	C112	ECEA1ES331	C178	ECEA1HS100	S16	Slide Switch
R148	ERD25FJ822	R256	ERD25TJ102	R611	ERD25TJ473	R256	ERD25TJ473	R612	ERD25TJ473	C113	ECEA1ES331	C179	ECEA1HS100	S17	Slide Switch

4 TAPE END DETECTOR CIRCUIT BOARD

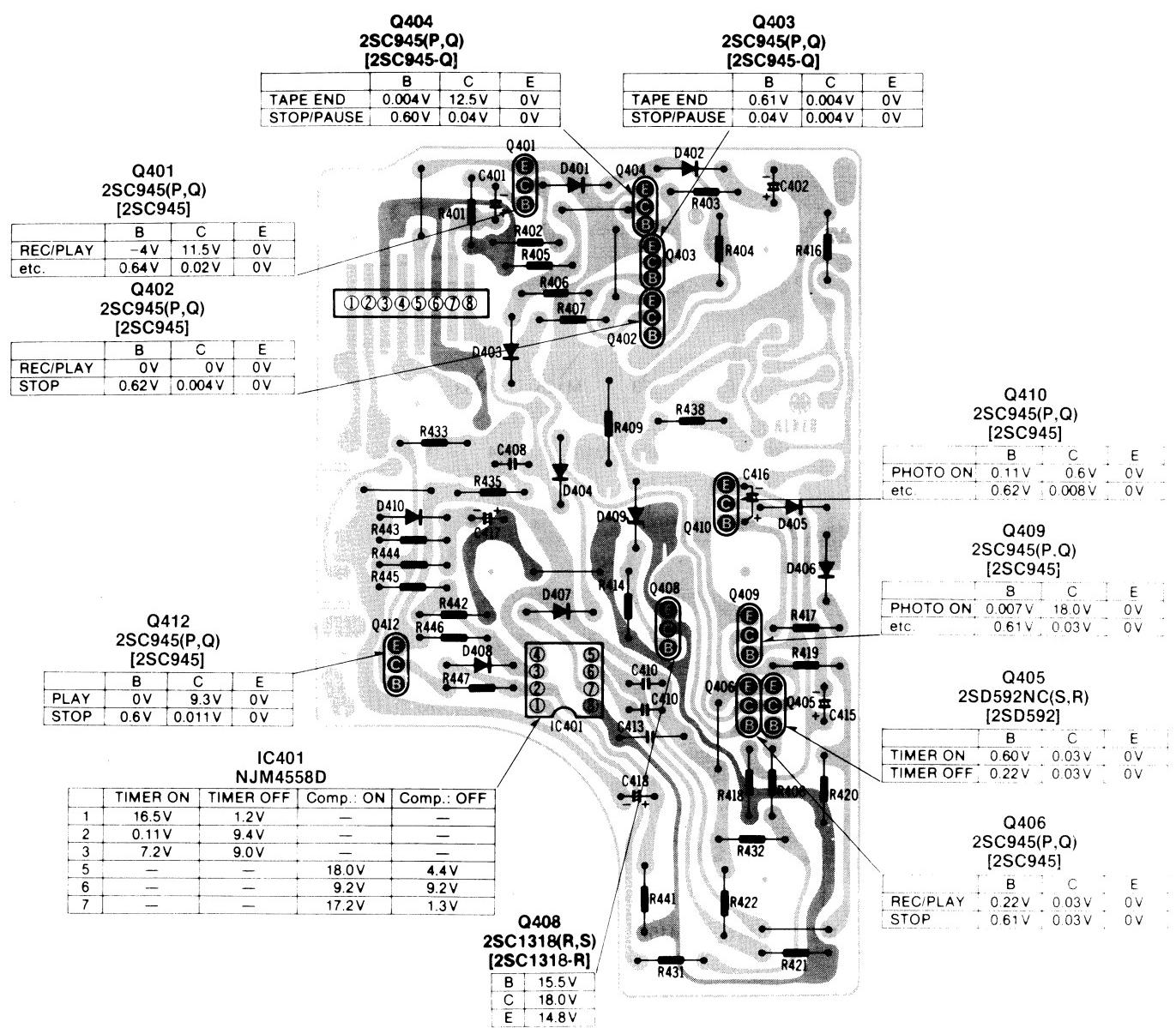

NOTES:

- The circuit shown in on the conductor is B+ (bias) circuit.
- The circuit shown in on the conductor side indicates printed circuit on the back side of the printed circuit board.
- Values indicated in are DC voltage between the ground and electrical parts.
- All voltage values shown in circuitry are under no signal condition.
- Unless otherwise specified, voltage measurement conditions are that tape travel is at STOP, tape mode at NORMAL, and Dolby NR switch at OFF.
- STOP**.....Voltage at stop mode.
- PLAY/REC**.....Voltage playback/record mode.
- STOP/PAUSE**.....Voltage at stop/pause mode.
- TAPE END**.....Voltage at tape end mode.
- MODE**.....Voltage at mode (S600: ON).
- MODE**.....Voltage at mode (S602: ON).
- TIMER ON**.....Voltage when a high level output is given from the timer circuit.
- PHOTO ON**.....Voltage during photo sensing.
- REC/MODE \neq /MANUAL**.....Voltage when operation is switched to manual during recording in Mode \neq (S601: ON).
- PLAY/TAPE END**.....Voltage when the end of tape is played back.
- MODE \neq /PLAY/TAPE END**.....Voltage when the end of tape is played back in Mode \neq (S601: ON).
- REVERSE**.....Voltage when tape travel is reversed.

WIRING CONNECTION DIAGRAM

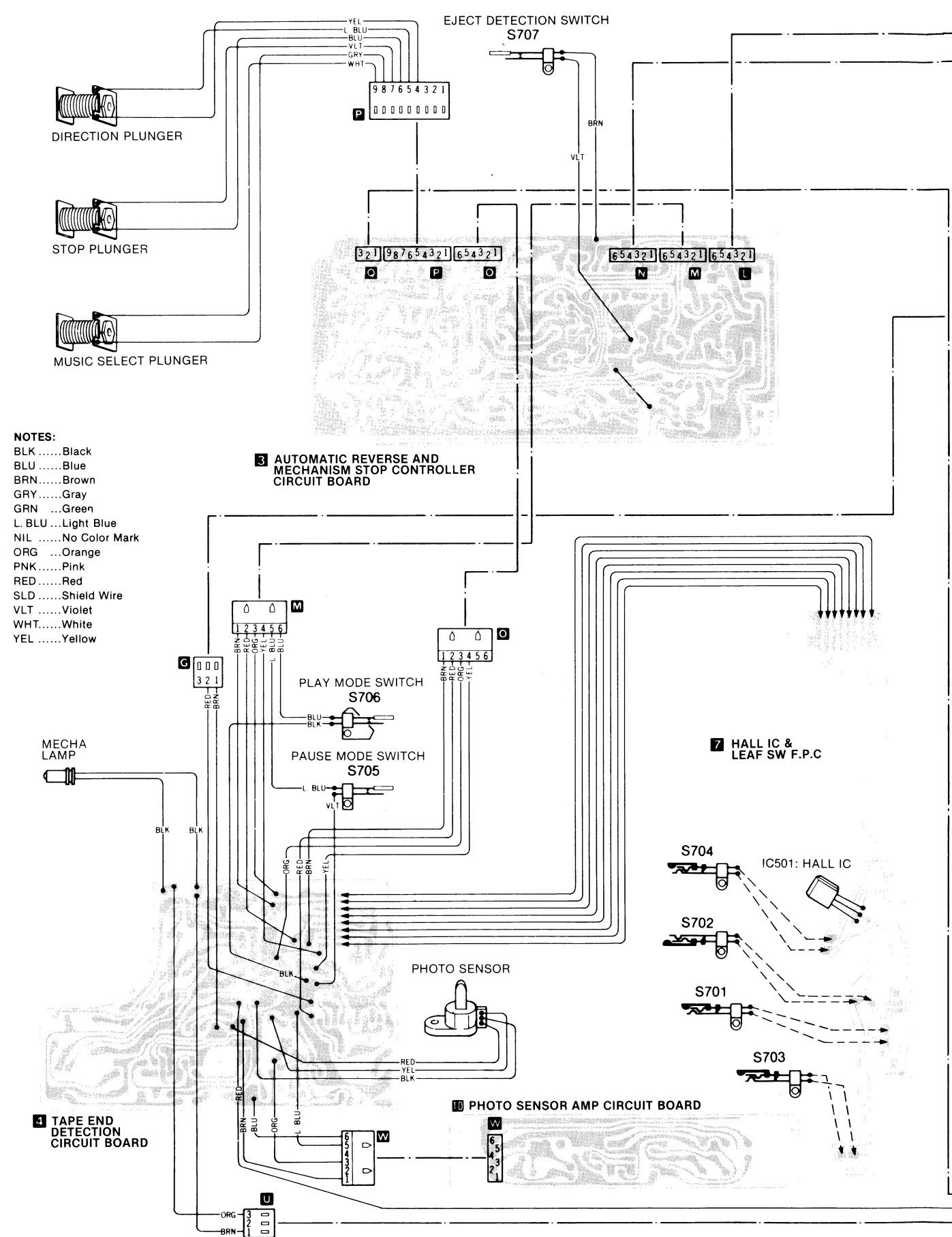


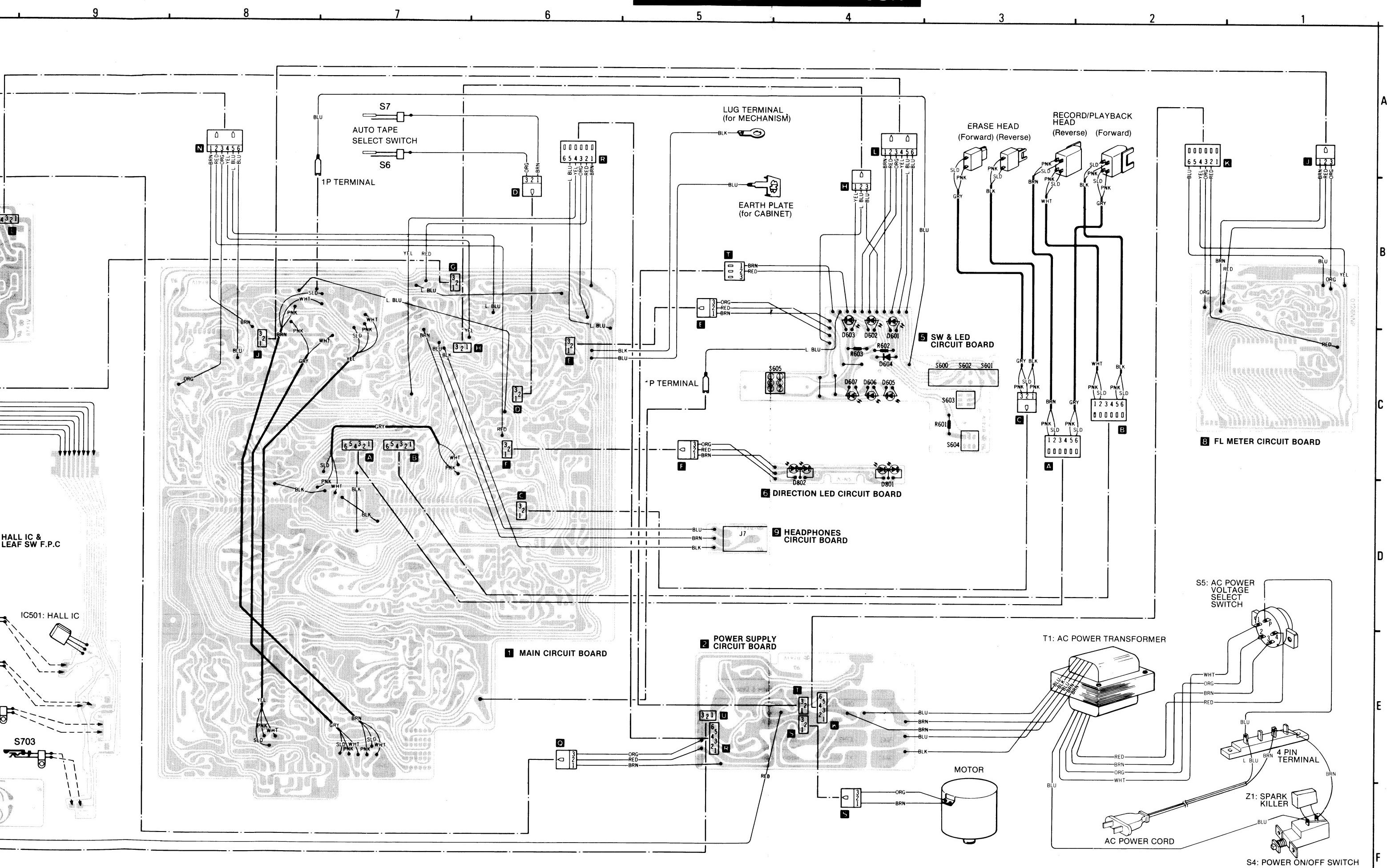
4 TAPE END DETECTOR CIRCUIT BOARD


NOTES:

- The circuit shown in on the conductor is B+ (bias) circuit.
- The circuit shown in on the conductor side indicates printed circuit on the back side of the printed circuit board.
- Values indicated in are DC voltage between the ground and electrical parts.
- All voltage values shown in circuitry are under no signal condition.
- Unless otherwise specified, voltage measurement conditions are that tape travel is at STOP, tape mode at NORMAL, and Dolby NR switch at OFF.
- STOP** Voltage at stop mode.
- PLAY/REC** Voltage playback/record mode.
- STOP/PAUSE** Voltage at stop/pause mode.
- TAPE END** Voltage at tape end mode.
- MODE** Voltage at mode (S600: ON).
- MODE** Voltage at mode (S602: ON).
- TIMER ON** Voltage when a high level output is given from the timer circuit.
- PHOTO ON** Voltage during photo sensing.
- REC/MODE /MANUAL** Voltage when operation is switched to manual during recording in Mode (S601: ON).
- PLAY/TAPE END** Voltage when the end of tape is played back.
- MODE /PLAY/TAPE END** Voltage when the end of tape is played back in Mode (S601: ON).
- REVERSE** Voltage when tape travel is reversed.

WIRING CONNECTION DIAGRAM

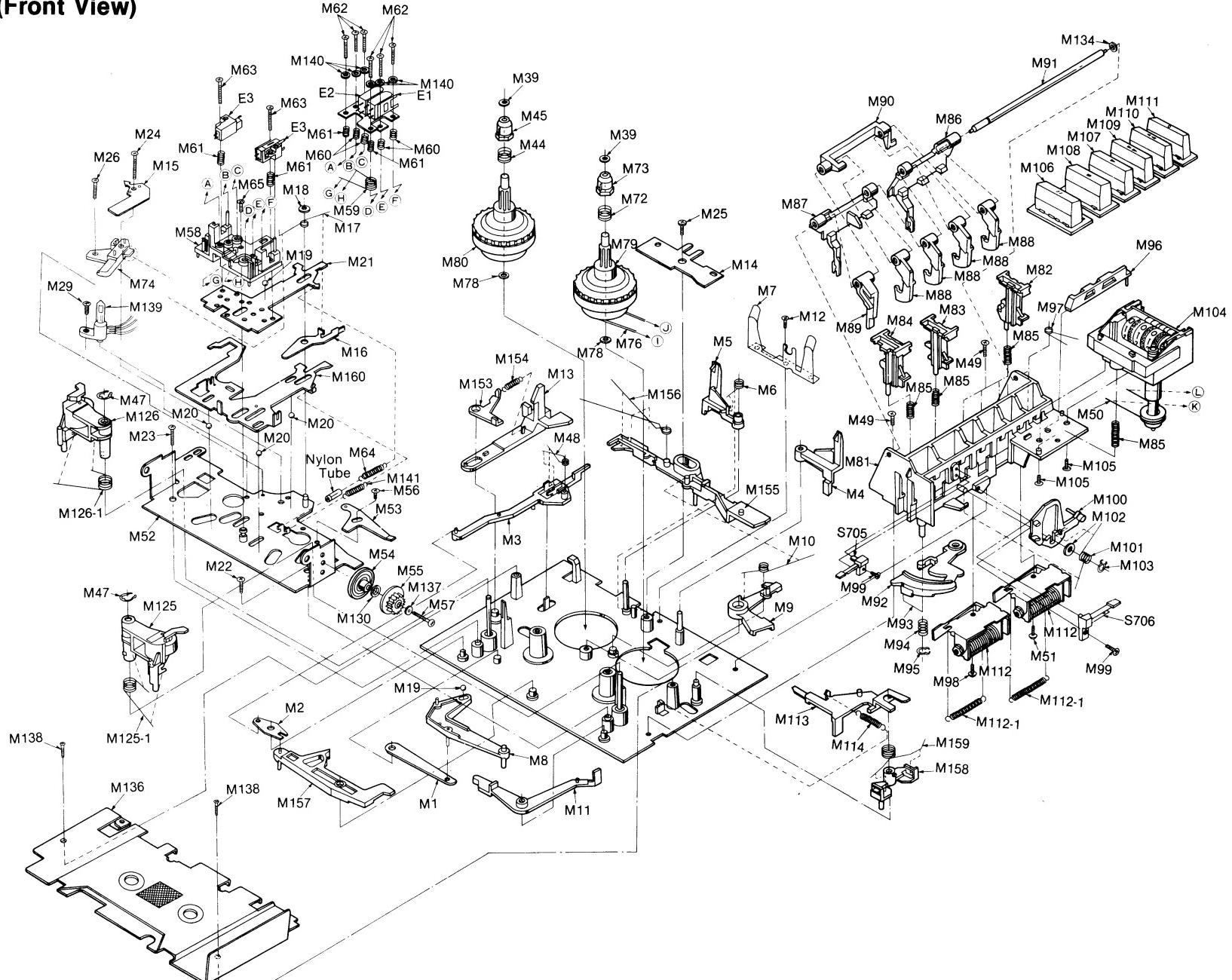




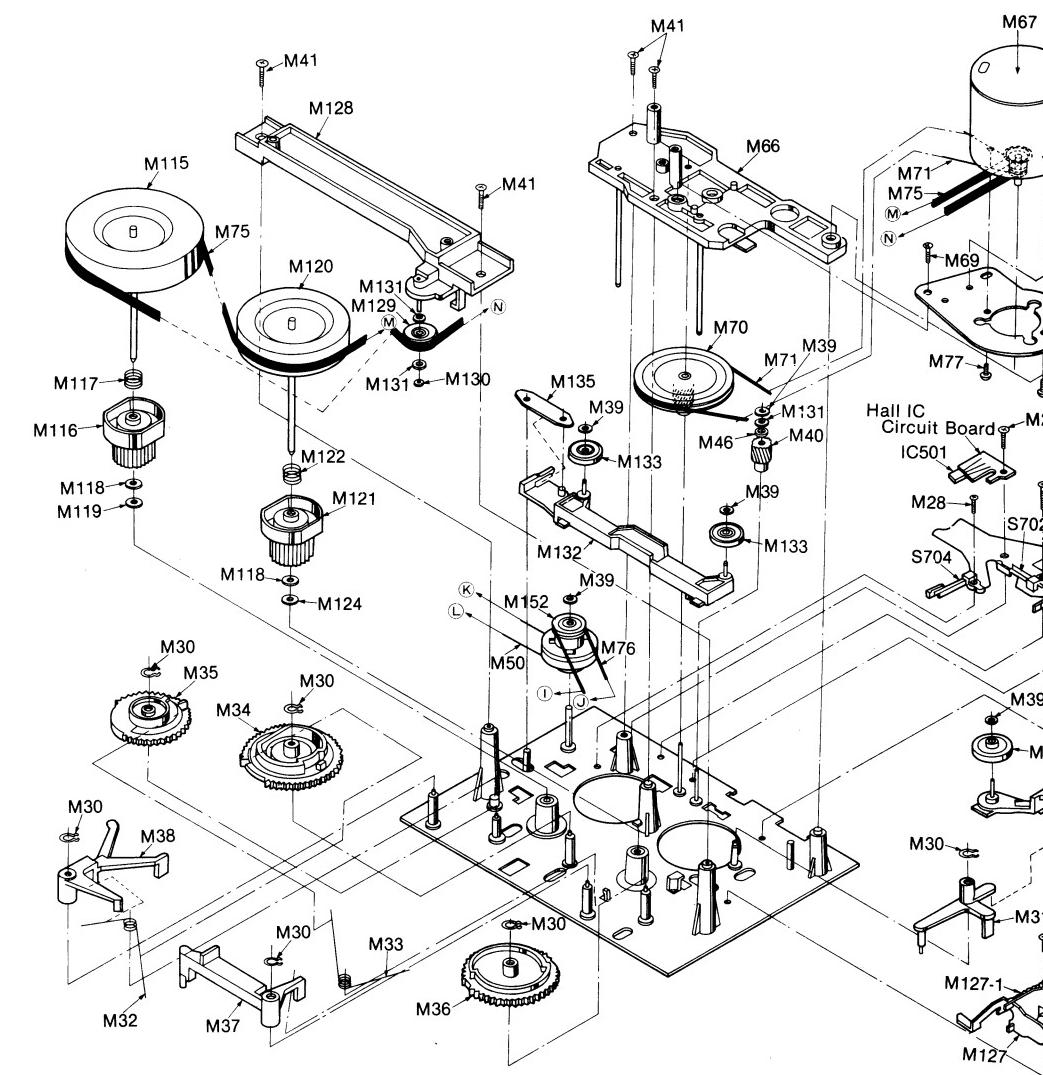
1 2 3 4 5 6 7 8 9

MECHANICAL PARTS LOCATION

(Front View)

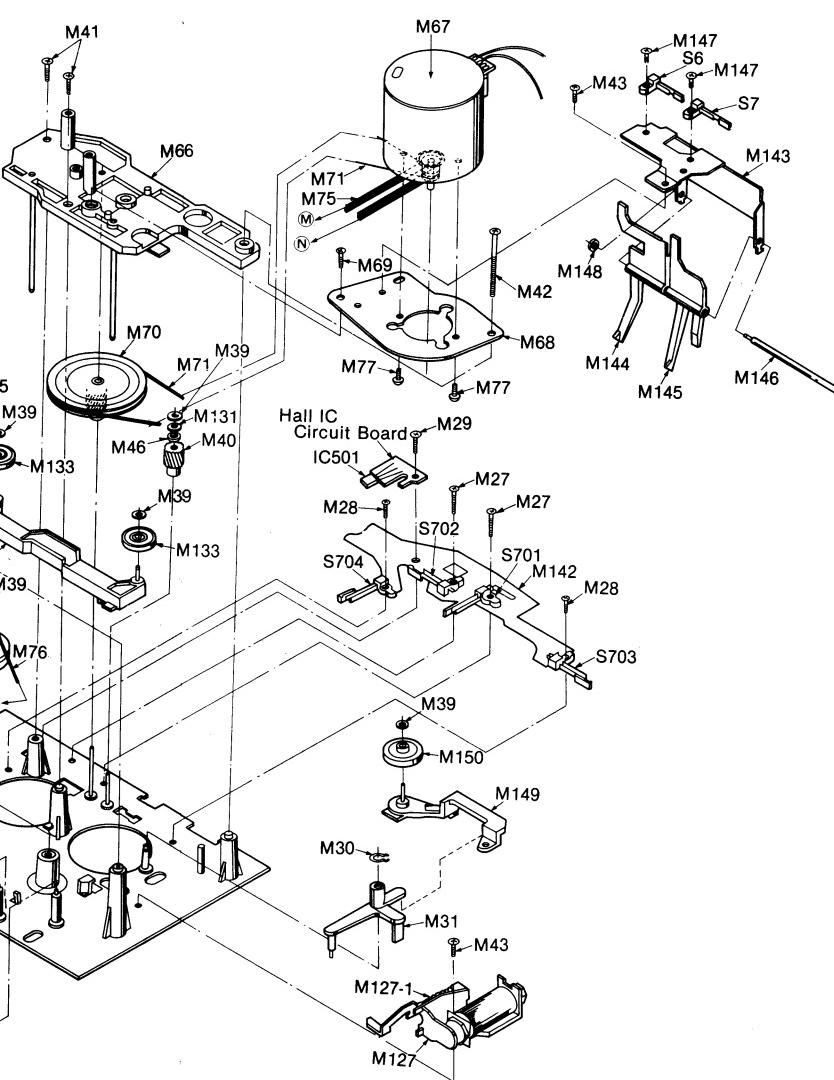


(Rear View)



REPLACEMENT PARTS LIST

Ref. No.	Part No.	Part Name & Description	Ref. No.	Part No.	Part Name & Description	Ref. No.	Part No.	Part Name & Description	Ref. No.	Part No.	Part Name & Description	Ref. No.	Part No.	Part Name & Description	Ref. No.	Part No.	Part Name & Description
MECHANICAL PARTS																	
M1	QML3808	Driving Arm	M19	QDK1017	Steel Ball 2φ	M38	QML3813	Pause Lock	M57	XTN26+10B	Tapping Screw +2.6×10	M101	QBN1858	Switch Lever Spring	M113	QMR1956	FF Rod
M2	QMF2212	Reverse Plate	M20	QDK1012	Steel Ball 2.5φ	M39	QBW2008	Snap Washer 1.6φ	M58	QXK2569	Head Spacer Assembly	M102	XWE35BW	Washer 3.5φ	M114	QBT1948	FF Rod Spring
M3	QMR1957	Changing Connection Rod	M21	QMK1935	Head Base Plate	M40	QDG1245	Takeup Gear-A	M59	QBN1857	Head Base Plate Spring-B	M103	XUB3FT	Stop Ring 3φ	M115	QXF0182	Flywheel-R
M4	QML3811	Erase Safety Lever-R	M22	XTN26+6B	Tapping Screw +2.6×6	M41	XTN3+10B	Tapping Screw +3×10	M61	QBC1103	Head Spring-B	M104	QDC0148	Tape Counter	M116	QDG1246	Flywheel-G
M5	QML3812	Erase Safety Lever-L	M23	XTN26+10B	Tapping Screw +2.6×10	M42	XTN3+28B	Tapping Screw +3×28	M62	XSN2+10	Screw +2×10	M105	XTS26+8B	Screw +2.6×8	M117	QBC1270	Back Tension
M6	QBN1849	Erase Safety Spring	M24	XTN26+14B	Tapping Screw +2.6×14	M43	XTN26+6B	Tapping Screw +2.6×6	M63	XSN2+14	Screw +2×14	M106	QGO1942	PAUSE Button	M118	QBW2026	Washer
M7	QBP1936	Cassette Pressure Spring	M25	XTS26+8B	Screw +26×8	M44	QBC1372	Reel Table Spring	M64	QBT1947	Head Base Plate Return Spring-A	M107	QGO2098	"	M119	QBW2049	Washer
M8	QML3834	Driving Lever	M26	XTN26+6B	Tapping Screw +2.6×6	M45	QMB1389	Reel Table Hub-L	M65	XTN26+4B	Tapping Screw +2.6×4	M108	QMR1954	"	M120	QXF0183	Flywheel-L
M9	QML3818	Brake Lever	M27	XTN2+5B	Tapping Screw +2×5	M46	QBF1286	Snap Washer 1.6φ	M66	QKX2572	Reel Frame Assembly	M109	QGO1943	PLAY Button	M121	QDG1247	Flywheel-G
M10	QBN1852	Brake Spring	M28	XTN2+8B	Tapping Screw +2×8	M47	XUC25FT	Stop Ring 2.5φ	M67	QXU0285	Motor Assembly	M110	QGO1943	PLAY Button	M122	QBC1373	Back Tension
M11	QML3827	PLAY Connection Lever	M29	XTN26+6B	Tapping Screw +2.6×6	M48	QBN1847	Change Spring	M68	QMF2213	Motor Angle	M111	QGO1944	STOP Button	M123	QBW3221	Washer
M12	XTN26+4B	Tapping Screw +2.6×4	M30	XUB3FT	Stop Ring 3φ	M49	XTN26+6B	Tapping Screw +2.6×6	M69	XTN26+6B	Tapping Screw +2.6×6	M112	QGO1944	STOP Button	M124	QBW2099	Pressure Roll
M13	QMR1951	Eject Rod	M31	QML3826	Idler Connection Lever	M50	QDB0235	Counter Belt-A	M70	QXG1065	Takeup Gear-B	M113	QBN1859	FF Button	M125	QXL1520	Pressure Roll
M14	QMF2211	Erase Safety Plate	M32	QBN1851	Pause Lock Spring	M51	XTN26+6B	Tapping Screw +2.6×6	M71	QDB0312	Takeup Belt	M114	QBT1948	FF Button	M126	QBN1896	Pressure Roll
M15	QBP1894	Head Base Plate Spring-A	M33	QBN1850	Head Lock Spring	M52	QXK2568	Upper Base Plate Assembly	M72	QBC1373	Reel Table Spring	M115	QXA1226	Changing Ar			
M16	QML3859	Head Base Plate Pressure Lever	M34	QDG1241	PLAY Cam	M53	QMA4301	Control Plate	M73	QMB1388	Reel Table Hub-R	M127	QBT1500	Lock Plate S			
M17	QBN1853	Pressure Lever Spring	M35	QDG1242	Pause Cam	M54	QDP1920	Dumper Table	M74	QMZ1281	Photo Sensor Frame	M128	QXL1525	Thrust Frame			
M18	QBW2046	Snap Washer 2.6φ	M36	QDG1243	Changing Cam	M55	QDG1254	Dumper Gear	M75	QDB0311	Flywheel Belt	M129	QXP0633	Takeup Pulle			
			M37	QML3816	PLAY Lock	M56	XTN26+6B	Tapping Screw +2.6×6	M76			M130	QBW2020	Snap Washer			
									M77			M131	QBW2100	Poly Washer			
									M78			M132	QXL1527	FF Idler Ass			
									M79			M133	QXP0634	Fast Wind Pre			
									M80			M134	QBW2012	Snap Washer			
												M135	QMF2215	FF Connectio			

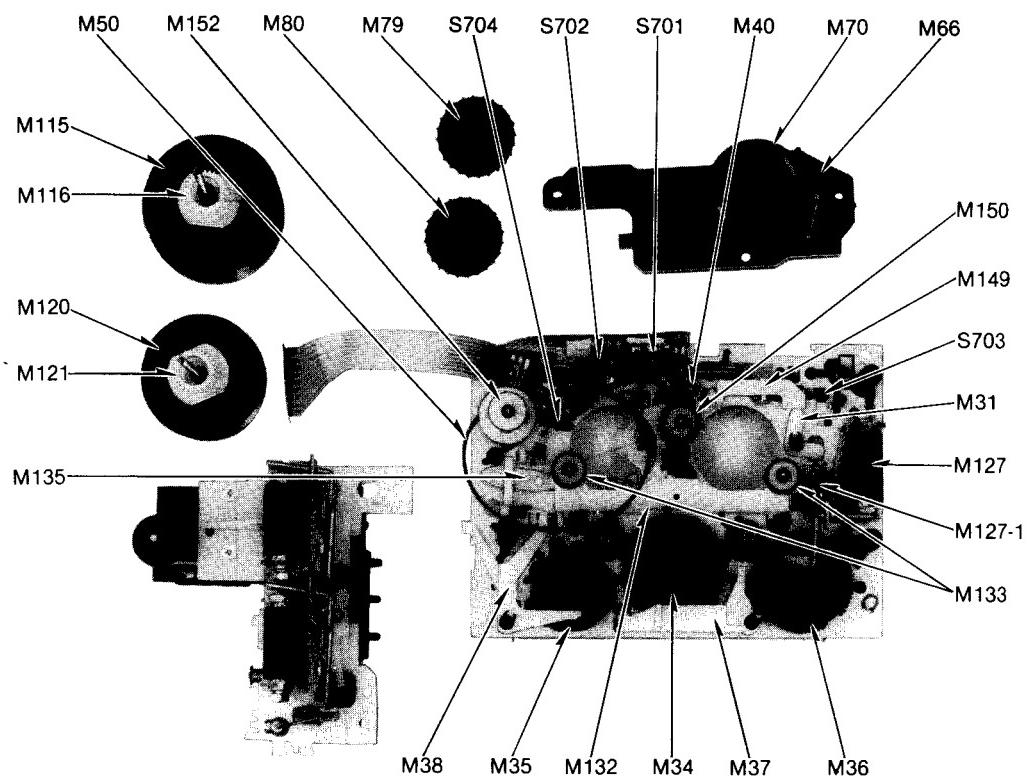


SPECIFICATIONS

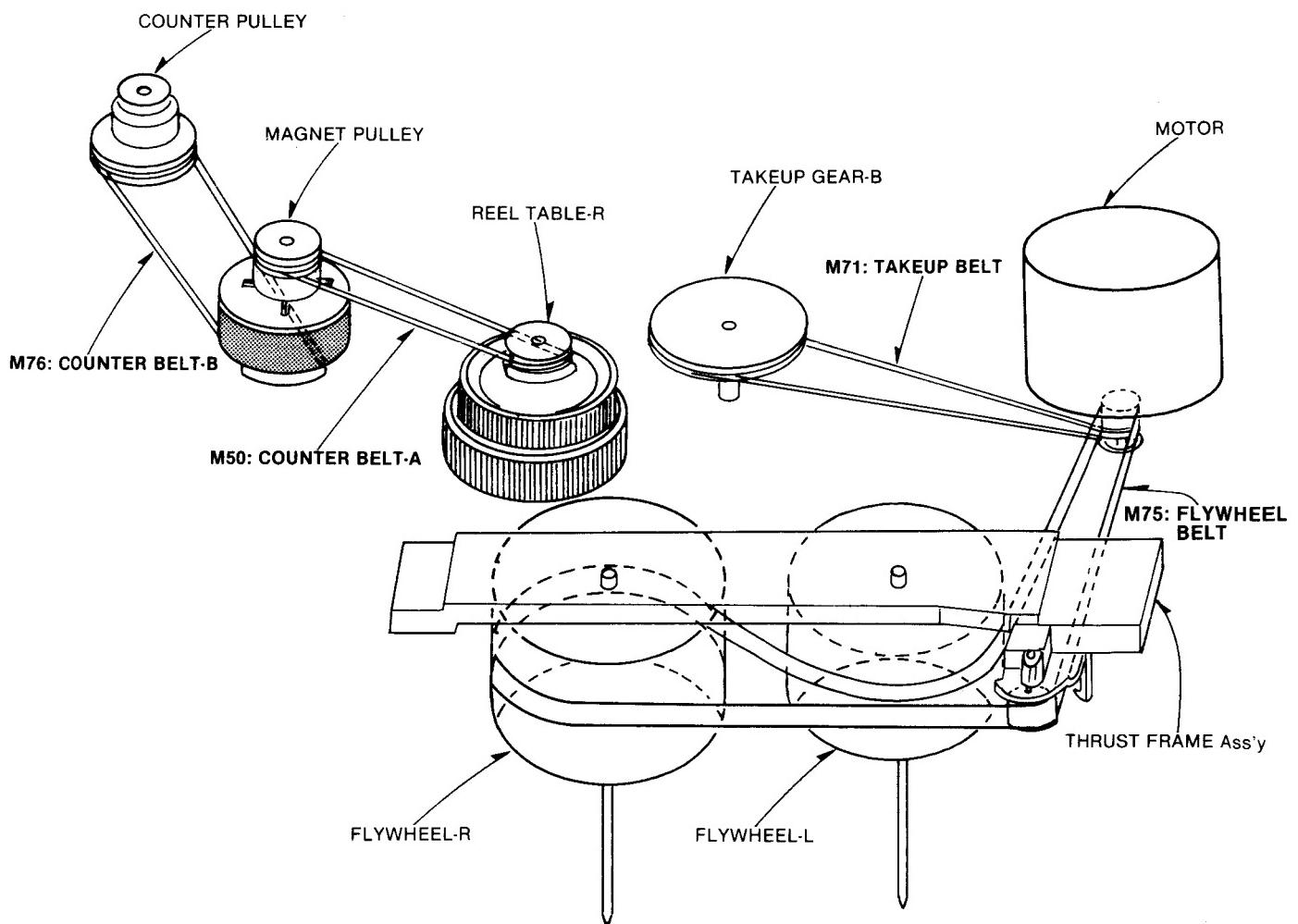
Pressure of pressure roller	$380 \pm 40 \text{ g}$
Takeup tension * Use cassette torque meter ... QZSRKCT	$40^{+15}_{-10} \text{ g}\cdot\text{cm}$
Wow and flutter; (JIS) * Use test tape ... QZZCWAT	Less than 0.14% (WRMS)

Part Name & Description	Ref. No.	Part No.	Part Name & Description
Lever Spring	M113	QMR1956	FF Rod
Spring 3φ	M114	QBT1948	FF Rod Spring
Counter	M115	QXF0182	Flywheel-R
2.6×8	M116	QDG1246	Flywheel Gear-R
Button	M117	QBC1270	Back Tension Spring
	M118	QBW2026	Washer
	M119	QBW2049	Washer
	M120	QXF0183	Flywheel-L
	M121	QDG1247	Flywheel Gear-L
	M122	QBC1373	Back Tension Spring
	M123	QBW3221	Washer
	M124	QBW2099	"
	M125	QXL1520	Pressure Roller Arm-R Assembly
	M125-1	QBN1895	Pressure Roller Spring-R
	M126	QXL1521	Pressure Roller Arm-L Assembly
	M126-1	QBN1896	Pressure Roller Spring-L
	M127	QXA1226	Changing Angle Assembly
	M127-1	QBT1500	Lock Plate Spring
	M128	QXL1525	Thrust Frame Assembly
	M129	QXP0633	Takeup Pulley Assembly
	M130	QBW2020	Snap Washer 1.6φ
	M131	QBW2100	Poly Washer
	M132	QXL1527	FF Idler Assembly
	M133	QXP0634	Fast Wind Pulley Assembly
	M134	QBW2012	Snap Washer
	M135	QMF2215	FF Connection Plate

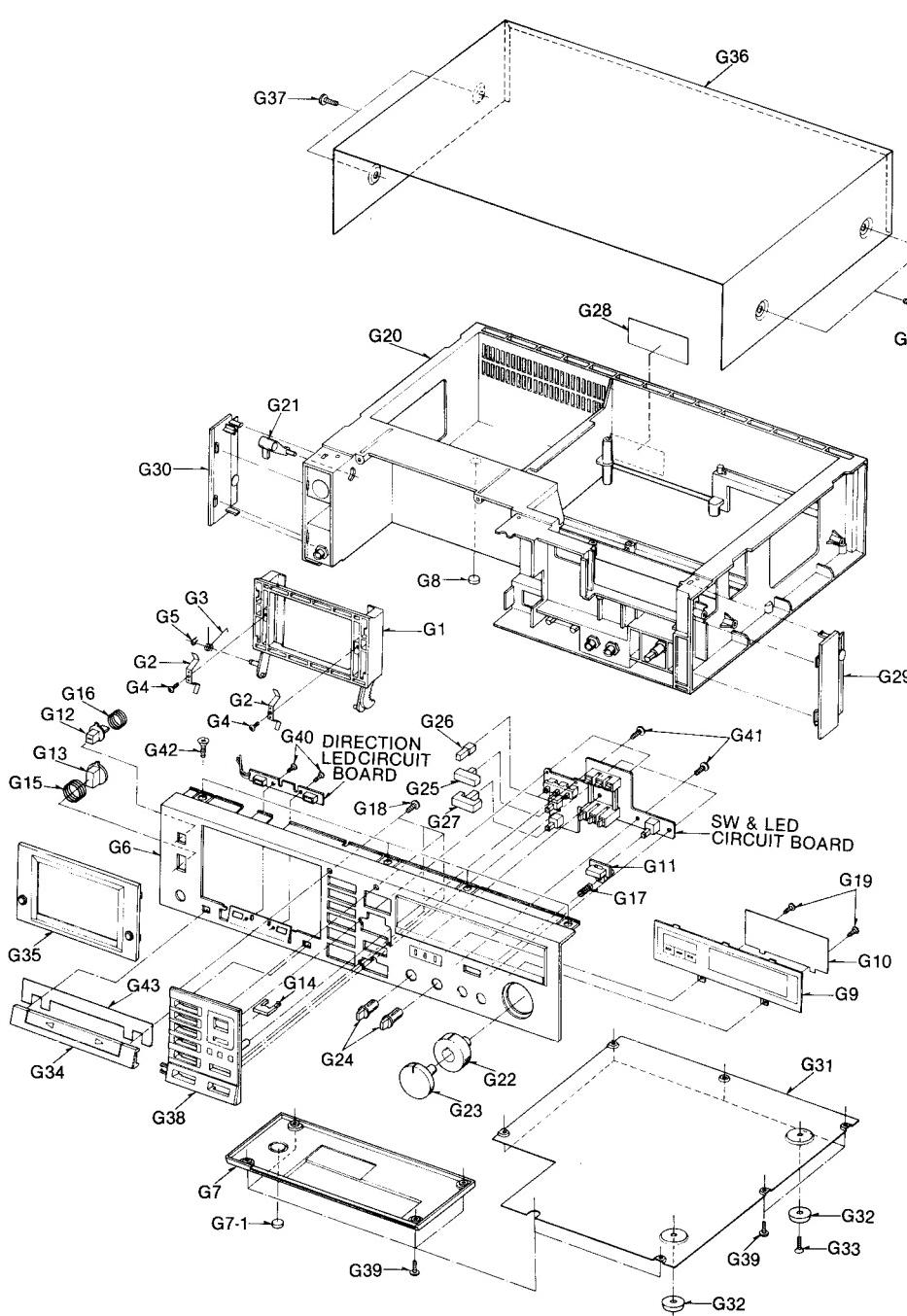
Ref. No.	Part No.	Part Name & Description	Ref. No.	Part No.	Part Name & Description
M136	QXH0389	Mechanism Cover "Silver Type"	M147	XTN2+5B	Tapping Screw $\pm 2 \times 5$
	QXH0389K	"Black Type"	M148	QBW2008	Snap Washer 1.6φ
			M149	QXL1530	PLAY Idler Assembly
			M150	QXP0635	Takeup Idler Assembly
			M151	QBW2008	Snap Washer 1.6φ
			M152	QXP0632	Magnet Pulley Assembly
			M153	QML3825	Eject Prevention Lever
			M154	QBT1949	Prevention Lever Spring
			M155	QMR1958	Erase Prevention Rod
			M156	QBN1854	Connection Spring
			M157	QXL1528	Changing Lever Assembly
			M158	QML3829	FF Lever
			M159	QBN1848	FF Lever Spring
			M160	QMF2216	Driving Plate
			M161		
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BELT LOCATION



CABINET PARTS LOCATION



REPLACEMENT PARTS LIST

Ref. No.	Part No.	Part Name & Description
CABINET PARTS		
G1	QKFM6008K	Cassette Holder
G2	QBP1925	Tape Holding Spring
G3	QBN1886	Cassette Lid Spring
G4	XTN26+5FZ	Tapping Screw +2.6×6
G5	XUC5FT	Stop Ring 5¢
G6	QYPM0058	Front Panel Assembly
	"Silver Type"	
	QYPM0058K	"
	"Black Type"	
G7	QYCM0031	Bottom Plate Assembly
G7-1	QKA1081	Rubber Foot-A
G8	QKA1081	"
G9	QGLM0030	Meter Cover
	"Silver Type"	
	QGLM0030Y	"
	"Black Type"	
G10	QKJM0072	Meter Filter
G11	QGOM0082	Music Select Button
G12	QGOM0083	Eject Button
G13	QGOM0084	Power Button
G14	QGOM0081	Counter Button
G15	QBC1408	Power Button Spring
G16	QBC1231	Eject-Button Spring
G17	QBC1380	Select Button Spring
G18	XTN26+5B	Tapping Screw +2.6×5
G19	XTN26+6B	Tapping Screw +2.6×6
G20	QKMM0040K	Main Case
G21	QMLM0042	Eject Lever
G22	QYT0636	Input Level Control Knob-R
G23	QYT0637	Input Level Control Knob-L
G24	QGT1565	Output Level/Dolby NR Knob
G25	QGOM0078	Direction Button
G26	QGOM0079	Mode Select Button
G27	QGOM0080	Rec Mute Button
G28	QGSM0169	Main Name Plate
G29	QGKM0159	Side Panel-R
	"Silver Type"	
	QGKM0159K	"
	"Black Type"	
G30	QGKM0160	Side Panel-L
	"Silver Type"	
	QGKM0160K	"
	"Black Type"	
G31	QGCM0060	Bottom Cover
G32	QKA1082	Rubber Foot-B
G33	XTS3+10B	Screw +3×10
G34	QYKM0011A	Indication Plate Assembly
	"Silver Type"	
	QYKM0011Y	"
	"Black Type"	
G35	QYFM0052S	Cassette Lid Assembly
	"Silver Type"	
	QYFM0052K	"
	"Black Type"	
G36	QGCM0057	Case Cover
	"Silver Type"	
	QGCM0057K	"
	"Black Type"	
G37	XTB4+10BFN	Tapping Screw +4×10
	"Silver Type"	
	XTB4+10BFZ	"
	"Black Type"	
G38	QYPM0059	Operation Panel Assembly
	"Silver Type"	
	QYPM0059K	"
	"Black Type"	
G39	XTN3+10B	Tapping Screw +3×10
G40	XTN3+6B	Tapping Screw +3×6
G41	XTN26+8B	Tapping Screw +2.6×8
G42	XTS3+10B	Screw +3×10
G43	QBHU184	Spacer
ACCESSORIES		
A1	QFX0084	Connection Cord Assembly
A2	QQT3259	Instruction Book
PACKINGS		
P1	QPNM0186	Inside Carton
P2	QPAM0048	Cushion-R
P3	QPAM0049	Cushion-L
P4	XZB50X65A02	Poly Bag (for UNIT)
P5	QPQ1052	Poly Sheet (for AC Cord)
P6	QPS0434	Pad

Parts Change Notice

Model No.

RS-M258R

(D)...For all European areas
except United Kingdom. (N)...For Asia, Latin America,
(B)...For United Kingdom. Middle East and Africa (A)...For Australia.
areas. (P)...For U.S.A.
(C)...For Canada.

(F)...For Asian PX.
(J)...For European PX.

Please revise the original parts list in the Service Manual to conform to the change(s) shown herein. If new part numbers are shown, be sure to use them when ordering parts.

Reason for Change		*The circled item indicates the reason. If no marking, see the Notes in the bottom column.			
1. Improve performance					
2. Change of material or dimension					
3. To meet approved specification					
4. Standardization					
5. Addition					
6. Deletion					
7. Correction					
8. Other					
Interchangeability Code		**The circled item indicates the interchangeability. If no marking, see the Notes in the bottom column.			
Parts	Set Production				
A Original	Original Early	Original or new parts may be used in early or late production set.			
New	New Late	Use original parts until exhausted, then stock new parts.			
B Original	Original Early	Original parts may be used in early production sets only. New parts may be used in early or late production sets. Use original parts where possible, then stock new parts.			
New	New Late				
C Original	Original Early	New parts only may be used in early or late production sets.			
New	New Late	Stock new parts.			
D Original	Original Early	Original parts may be used in early production sets only. New parts may be used in late production sets only. Stock both original and new parts.			
New	New Late				
E Other					
Part Number					
Model No.	Ref. No.	Original Part No.	New Part No.	Notes (* - **)	Part Name & Descriptions
RS-M258R	VR301	EVNM4AA00B52	EVNM4AA00B13	1-C	Variable Resistor
"	D304	MN161	MV121	"	Diode
"	E3(D/B)	RHR993ZA	QTD1315	2-A	Wire Clamper
"	E47(N/F/J)	QJT1029	QJT1096	2-C	Nylon Coupler
"	G22	QYT0636	QYT0647	2-D	Input Level Control Knob-R
"	G23	QYT0637	QYT0648	"	Input Level Control Knob-L
"	A2(B)	QQT3259	QQT3312	7	Instruction Book
NOTE: • Important safety notice Components identified by have special characteristics important for safety When replacing any of these components, use only manufacturer's specified parts.					

File this Parts Change Notice with your copy of the Service Manual.

Original Service Manual is Model No. RS-M258R(P/C) Order No. ARD82050145C1-19.

(D/B) Order No. ARD82030129C2-19.

(N/A/F/J) Order No. ARD82050148C7-05.

Technics**National / Panasonic****Matsushita Electric Trading Co., Ltd.**

P.O. Box 288, Central Osaka Japan

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